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MENTAL MECHANISMS

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PART III

I. Serving Mainly the Process of Maturation

It should be restated and emphasized that all the following mechanisms normally operate in the unconscious, so that the person is not aware of them, at the time of their occurrence.

1. *Identification*, is the way in which an individual incorporates, within his own personality, the power and qualities, bodily and mental, of other desirable persons. It occurs at two levels:

a) primary, as used by the child.

b) secondary, as used in later life.

It is an essential part of the growth and development of a personality. In the early 'embryonic' phase, identification has a strong oral component. The child 'eats up' the image he has of his parent(s). This tendency to 'cannibalize' beginning at the breast and continuing with the mouth cavity still central in the psychic image of the organism (that is, mentally the person is at the centre of the universe, and the mouth at the centre of the person), is seen in both children and primitive people, in their dreams, their fairy tales, folklore and rituals. The person devoured imparts to the cannibal his power and qualities, good or bad. The act of embracing and in the child, some acts of biting, sometimes a sizeable chunk of parent, symbolizes rather vividly this somatized way of identification. The toddler, in his innocent and undiscriminating way, like a psychological earthworm, uses his mouth in the 'see-touch-swallow' sequence, not only for testing and exploration, but also for 'swallowing' hook, line and sinker, those near and dear and feared. Also, that is one way he has of protecting himself from bogeys who would otherwise eat him up. Later, he then blows himself up with newly gathered strength that makes him feel and even swagger and imitate the mannerisms of Daddy—or makes her cuddle and care for her little doll like Mummy with the newly born. And so "the apple does not fall far from the tree" is a truism with a psychological foundation rather than a sole basis in genetics. The more difficult stage is the subsequent one of discrimination when the child begins to separate good and bad

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qualities, first by appreciating whether they please or hurt him and next by opening his eyes to other people's behaviour. He then slowly regurgitates the qualities and values which become offensive. Yet he may retain the most perniciously offensive aspects of the parental character, in sheer self-protection.

If identification is carried to a morbid extreme and is prolonged without breaks, frustrations or let-downs, such as the discovery that idols have feet of clay, individuation is blocked for then there is hardly a consciousness or identity of the self, apart from the person the child is identified with. This is frequently the case of the only child of an over-protecting, love-strangling parent. Equally, being neglected and lost somewhere in the middle of a long series of siblings makes sufficient approach to one parent and identification difficult; since the parents will make little difference among the children, their birthdays, their beds, their toys and their clothes, individuation is difficult and they are delayed in telling themselves apart from each other. Their delayed feeling of self shows later in their inability to have clear childhood memories.

Example of pathologic identification: A striking dark Semitic beauty came to the office with her appearance ludicrously spoilt by a frontal streak of burnt blond hair. It proved easy to uncover that this was a desperate and belated attempt to separate herself and her bodily image of herself, from that of her equally beautiful young mother whose spit image she was. The mother, an aggressive psychopathic nymphomaniac, strangled the daughter with overprotecting forced love and the latter began to re-enact the mother's psychopathology by prostitution.

The schizophrenic, fixated at a primitive stage of mental development, often fails to identify even with a human being (a parent) and so hardly distinguishes inwardly between himself and his cosmic surroundings. He is then, as the infant probably is, blissfully deluded by feelings of omnipotence and omniscience. Identification may be so pathologically strong in a family, between lovers, a married couple and even the spinster and her Pekinese dog, that the interesting condition of a folie-à-deux (trois, quatre etc.) is possible: One member, usually the mother or daughter, is the prime-mover with a psychosis, often paranoid, and the others catch it; likewise the neurotic lady with a neurotic dog!

Secondary identification occurs when the pre-adolescent has worked through most of the primary relationships with parents and siblings and is enlarging the psychologic vista to focus on and adopt the characters of teacher, girl or boy-friend, movie star or cub-leader. This is the stage of hero worship. Actors, on and off the stage, use the mechanism when they live their parts; audience when witnessing a play or a fight; the reader in immersing in the novel.

Primary identification gives the all-dependent child the real and imagined strength of the adult; secondary identification further enriches the personality by blending qualities often in contrast to a person's own nature, or the cannibalized nature of the parent.

Negative identification occurs when the individual so dislikes or hates an-

other that he seeks to mould himself on the very opposite image. When an adult, still smarting under the pain inflicted by his own parents, wants a child of his own, to be a different parent to it, his motivation for parenthood stems out of this kind of identification. Alas, too often it turns out that a previous and stronger primary identification had already set in (in self protection) and that this parent becomes much like his own was and merely repeats the situation with his own children—using perhaps a different means, according to the current influence of culture and vogue. (At present it is "mental health" oriented and so rejection is not with a whip but rather by 'psychologizing' lashes).

Finally, sexual identification and therefore the direction of sex drive is not bestowed automatically by the sex-linked genes, genitals and endocrines but acquired, along the years of early childhood, by major identification with either masculine or feminine characteristics. In the pristine psychic amorphous state, potentials in either sexual direction are intermingled, though self-love (narcissism) naturally makes for a preference with one's own sex. The sex role differentiates slowly, guided by the influence of strong emotional relations with the parents (later siblings and playmates) and the concomitant identification with the one of the same sex. Patterns of culture are also brought to bear. Thus the mind needs to identify with the sex of its own body before the individual can play a healthy role in society. The proof is that despite a perfect bodily endowment, there is a high incidence of transient homosexuality (in which faulty identification plays a part) and a largish incidence of chronic homosexuality (fixated trait) where pathology has deviated the direction of sexuality.

2. *Repetition-compulsion* is the way in which significant situations or experiences are compulsively repeated in imagery (such as thoughts or dreams) or in acts (as in habits and compulsions) until they lose sufficient of their affective charge (pleasant or painful). It is really a double-edged process: on the one hand it helps learning—by making one repeat mentally the facts which stimulated curiosity, or were driven by necessity or pain into the mind—on the other hand it makes one wonder how a faulty reaction and hurtful mistakes ever lead to a new pattern of behaviour, since there is this propensity for repetition. The rhythm and nature of this mechanism is deeply rooted in man's biological nature, in the periodicity and compulsions of instinctual drives such as: hunger and satiety; sleep and wakefulness. It is seen in the expression of all instincts in the animal world (with their repetitive behaviour each spring and winter) in the pendular nature of human affairs and even in the cycles and repetition of the inanimate world of earth, wind and stars. It is the backbone of conservatism.

Repetition-compulsion, seeking for sameness in the environment, making for rigidity or even stereotypy in its extreme form, gives the organism a certain *stability*. In this respect it contrasts with another mechanism: dissociation, and with the fluctuations of mood, which give the organism a certain *plasticity*. Repetition-compulsion can be seen as a pattern of life, in the generations of a family, where the sons and

daughters re-make the pattern of their relationship to the parents, to one another and to the world, with incredible regularity. So that when we observe a series of mental disturbances in a family tree we should think of this dynamic mechanism as well as the more static and problematic workings of heredity.

The classical *example* is that of a patient who has met with or nearly met with an accident and injuries or some catastrophic trauma, at any level. For days and months and years, the memory of it will return, together with all the original reactions and will permeate thoughts, actions and dreams.

The curious fact, however, is that the compulsive repetition of a neurotic compromise to a stressful situation can be broken—by psychotherapy—and then that the law of Dollo applies analogously. Dollo's law states that the species which has found a function redundant and whose organs have been rendered thus vestigial, can never use them again even if it returns to the original milieu with its original stress for which those organs were adapted viz. the whale. Similarly once the situation is re-lived in psychotherapy, and its roots exposed to conscious analysis and eventual choice, insight prevents the same mechanism from being used the same way: i.e. the patient is no longer free to be ill *in the same way*. This, of course, in the case of the species and also of our patient, does not mean that they cannot evolve some other way, if the original stress remains and if there are secondary gains to be got.

The behaviour of a patient under some stressful physical method of treatment in psychiatry (e.g. E.C.T., Insulin-coma, CO_2 gas) exemplifies this phenomenon. At first he will show his own individual pattern of response (just as any patient does pharmacologically in response to a drug) with monotonous regularity. But once an interpretation is made and the *causes* of the pattern are exposed, the patient does not return to his idiosyncratic response (though, of course, he will continue to respond grossly the same way as others to a crude general stress).

Another example of the need for sameness and compulsive repetition is that of an autistic (schizophrenic-like) boy of five who came up to the child guidance clinic for a physical examination. So shocked was he by the unusualness of this experience that he 'froze' (petrified with fear) on exhibition of the medical instruments. At a later visit, his mother reported that he played incessantly, in solitude, a game in which he pretended to be the Doctor examining the patient (a chair), also representing himself. This play pattern persisted many months before this shocking experience—to an autistic child—was absorbed.

In society there is a whole spectrum of compulsions from the rituals and hoodoo dances of the primitives—and not so primitives—to the avoidance of stepping on the cracks in the sidewalk and to the custom of handshaking.

3. *Regression* is the way in which the mind when hurt and reaching an impasse, slides back on its developmental steps and lands, so to speak, at an earlier stage of emotional development and thus enjoys in childlike fashion the illusory privileges of that stage. In so far as it is a going-back, this mechanism is related to the previous one. It occurs in sleep, with its return to womb-like oblivion or dreams of things of long-ago; in sickness and in old age when

one is taken care of once more, and one feels like a little child. It happens when, say, a five year old who has been dry for sometime, wets again when his sister is born; or when his father, overcome by business worries begins again to bite his nails and lips, as he used to do in school; or when a neurotic more generally unable to cope, returns to an infantile land of make-belief.

4. *Overcompensation* is the overcharging of a tendency opposite to one's natural one, because the latter cannot be tolerated. It occurs when, say a masculine looking athletic type cannot allow himself to be as he feels he is: passive, effeminate and receptive, and so he behaves in an aggressive, domineering, giving-out manner, to hide (even from himself) his inner nature. It can also be seen in the domineering matriarch, or career-girl, with her outsize ostrich feather; or the Negro with feelings of racial inferiority who parks his convertible Cadillac in his shack's driveway. At the level of phantasy it is seen in the Walter Mitty or Don Quixote like day dreams of any of us, or the more pathological ways of the effeminate Don Juan or the paranoid Quassimodo.

5. *Compensation*. Unlike the former mechanism this would refer to the overcharging or undercharging of a tendency *in the same direction* of one's natural inclination, in an effort to make up for a deficiency.

6. *Sublimation* is the use of another mental functioning than the original one which is blocked either by the outside world or inner feelings. Thus by transformation of forbidden impulses into socially acceptable and more tolerable interests, the zests and passions of the id and resultant surplus energy may be satisfied by the compromise. All three of the above mechanisms can be compared to the organic phenomena of compensatory hypertrophy—or atrophy.

However, this analogy also brings out an important difference: Despite the complexity of Modern Medicine it is still naive enough to regard many forms of sickness in people as being caused by having too much, or too little of something—an organ, a function, a chemical, for instance: hypertrophy and atrophy, hypertension and hypotension; hyperkalaemia and hypokalaemia and hyperthyroidism or hypothyroidism. Further, in its effort to explain sickness through methods of scientific quantification it sees the normal individual as maintaining a mean level between too much and too little viz. euthyroid. Much of medicine operates on this all-or-none principle, in terms of the single-minded notion of quantitative imbalance. Yet now and again emergent facts contradict this simplification which may obscure the true nature of disease. For example some nutritional disturbances (avitaminosis; cirrhosis) do *not* appear in a person, if all foodstuffs are equally depressed in value and actually tend to occur only when there is a *differential disproportion*. This kind of subtler imbalance and also the notion not of all-or-none but of a spectrum of disorder (say from a sleepy person to a narcoleptic or an agitated to an epileptic) as well as the notion of *qualitative* changes, may account for the hitherto more mysterious aspects of disease. Certainly Psychiatry is more sophisticated in this respect. Unhampered by rigid, if artificial, laboratory techniques of assessment it has realized that a real person, both in sickness and in health,

uses a whole spectrum of mechanisms (in defense) varying (according to the challenge) both qualitatively and quantitatively. When the break in health occurs it is not only because he has used this or that "too much, or too little" but because he used it thus (along the spectrum) in relation to other functions. For instance a person does not become paranoid only because he is using excessively the projecting mechanism, but also because he failed to identify positively with the male-figure, became homosexually inclined, could not tolerate this and began using the projecting mechanism so much more than, say its opposite (introjection). Compensation and sublimation demonstrate the wisdom of economy in the mind (mental energy) just as the wisdom of the body shows its potential for repair and reserve power. The body uses many kinds of devices and prudent design:

(i) paired organs, making one expendable while the other hypertrophies;

(ii) large tissue reserves (liver) allowing for much loss.

(iii) rotation, bringing units alternatively under active operation and passive rest (kidneys, lungs) and,

(iv) alternative pathways (central nervous system). Thus to protect vital functions under stress or disease, these devices are employed. Furthermore some are also employed in growth, rather than protection. In this instance a change will occur, usually in the plastic organs, in *anticipation* of a functional demand e.g. breast, uterus, ovaries in adolescence or the vegetative system when alerted to danger. Finally a response, hypertrophy or neoplasia may occur in the course of artificial, vicarious or pathological stimulation. These considerations apply to the mind also though they are not as clearly defined yet, as they are in the body.

Thus in anticipation of emergence from the protection of family and school, the ego strengthens its self-feeling with 'anticipatory hypertrophy' in the self-assurance and cockiness of the pre-adolescent rebel. Much of this may be useful in the future function of leadership. However, under vicarious or pathological stimulation (e.g. cruel foster homes for an orphan) the rebellion becomes disorganized and 'neoplastic' and the chip on the shoulder, uncorrected by insight and a social conscience, becomes delinquent.

The opposite kind of situation may develop in which the superego (conscience) becomes hypertrophied, stimulated by law, social order and religion, and the fervent animal drives are brutally suppressed. Here 'atrophy' may take place and the individual's imagination drives up, he becomes dulled, cold, bored, withdrawn, or a chronic obsessive or a burnt-out schizophrenic. Where a burning desire is impeded or a function blocked by deprivation, trauma or faulty psychic function, sublimation is used and the original function may atrophy. And so the girl, whose parents wanted her to be a boy and whom nature made ungainly, becomes a tomboy who cannot discharge her feminine functions and becomes a mathematician, a bossy teacher, an expert in fencing or all-in-mud wrestling.

Sublimation is very much like the device the body has viz. (*C.N.S.*) for using alternative pathways to discharge a function. It is essential in the economy of the mind and particularly vital in its development with its many strictures and frustrations—viz. discipline of

cleanliness and behaviour, self-reliance, control of the sex impulse with its peak in adolescence etc. Perhaps we may take an example, from the other end of life: when the rather nondescript elderly maiden is thwarted by mischance and her own prudery, from ever making a layette of her own, she can but knit one for her niece (displacement and identification, as well as sublimatory activity) or else she will write nasty poison letters. In a sense all artistic endevour is sublimation. Certainly in the neurotic where there is still imagination enough, and creative power, a talent for art, a hobby, a satisfying means of gaining a living and generally any personality assets providing sublimation of overcharged and intolerable zests and passions, the resolution of inner conflicts is possible and much easier to achieve in therapy, than in the absence of these resources and that mechanism.

II. Mental Mechanisms Serving Adaptation

A. EMPLOYED IN HEALTH AND DISEASE

The most basic is:

1. *Narcissism* is the way in which the mind directs its mental energy to its owner, that is back to oneself. It is a composite of mental mechanisms. The opposite state directs mental energy away from the individual, such as in the mature state of "object-love", when man loves woman, and ultimately in the state of true altruism. Narcissism is biologically rooted. It will not tolerate excessive pain, danger from without, nor allow too strong a death-wish or destructive desire from within. Healthy narcissism not only prevents suicide but potentiates both *physical* and *psychological healing forces* in all sickness and disease. Paradoxically, where narcissism is pathologic, excessive or distorted, it may actually make for a suicidal motive. *Examples*: To escape the pain of living; fear of death! or the classic one of Narcissus himself who was so in love with his own beautiful image, that reflecting it back from a pool he got nearer and nearer till he drowned; or the Eskimo, so easily hurt will die to spite the man who slighted him.

   (a) *Primary Narcissism* is eminently the state of the infant in his omnipotence, the King of the household, the centre of the Universe, who can know no-one and love nothing beyond himself. In the history of the human race this was its state in its early animistic cradle. It is also the state of the schizophrenic seeking the safe haven of self-love and the womb of suspended animation.

   (b) *Secondary Narcissism* is reached when some maturation has taken place and the main bulk of mental energy is being directed away from the person and distributed to family, friends, opposite sex, intellectual and social interests and objects. Yet a sizeable charge of self-love remains. It becomes activated on withdrawal of consciousness (sleep) on isolation (severe punishment or death of a loved one) and when there is a break in health.

Example: In the routine anamnesis of a 26 year old single girl suffering from feelings of guilt connected with masturbation, she admitted she loved no-one and then it dawned on her, with a mixture of pleasure and newly re-

vealed guilt that the object of her greatest and most constant love was still herself. Thus her energy (love) was neurotically bound.

As the individual grows and finds himself, he is approaching wider and wider circles of objects and people. Under threat, in the infancy of the individual and of mankind, restricted physical and social life allowed the merely to attempt to alter internal mental and physical balances of Nature, (autoplastic phase); but in the maturing phase of the individual and of manforces of narcissism, in self defence, kind, when he feels stronger and knows the world better, man reacts to stress by attempting to change the outer physical and social balances of Nature (alloplastic phase).

2. *Projection* is a way of the mind of ascribing its own ugly thoughts and feelings and motives to another. If narcissism is biologically rooted in each individual, projection is rooted in the history of the race. It is an ancient and primitive mechanism, allowing fears to be exorcized as so many devils. It pictures vividly the contending forces of good and evil in us all through their projection in religion, art, music or writing. When the body integrity is broken biochemically or endocrinologically as in Addison's Disease, myxoedema, Simmonds Disease, by toxaemia, loss of vision, hearing or any way, it is by dint of this mechanism that unbearable psychic loads and pain are thrown out. As a consequence the person becomes morbidly suspicious, grandiose or paranoid. When Hamlet urges Polonius to see shapes in the clouds, he anticipates the projective techniques of Rorscharch and Murray, which test personality by way of this mechanism.

Example: During a particularly active play session Johnny kicked the Doctor on the shin and he later complained to mother that the Doctor disliked him so much that he had kicked Johnny on the shin.

3. *Introjection* is the way in which intolerably painful realizations regarding others are more comfortably ascribed to oneself. It is the reverse direction of projection. Though it is part of identification, the latter is a longer more all-enveloping process whereby the whole personality is identified with another, whereas here only certain qualities of others often 'bad' ones, are ascribed to oneself. For instance, it may be so intolerable to learn that mother is punitive and rejecting that it becomes a relief to think it is one's own fault that she is bad. It becomes a consolation to feel that her rejection is earned through one's own badness or naughtiness, even if that were not true. This is the mechanism which reverses the outgoing discharge of hostility and turns it within so that the person becomes depressed.

4. *Repression* is the way in which intolerable and incompatible drives, wishes or insights are excluded from the scrutiny of self-awareness. It differs from:

5. *Suppression* in its level of activity. The latter is a more actively conscious process whereas the former, like all genuine mental mechanisms, operates in the darkness of the unconscious.

Repression occurs, like most of these ways of the mind, in daily life and is the main factor in 'forgetting' familiar things and facts. It extends in a big way, like a cloak, over the first years of life and especially over those facets of childhood, adolescence and even the

immediate past which are hurtful and unpleasant. Forgetting the name of a person, an appointment or to do something is symptomatic of the operation of this mechanism. Over-repression can lead to 'atrophy' in the mind.

6. *Dissociation* is the way in which the mind isolates from the rest a part of itself which contains much hurt. It is comparable to the walling of an abscess. Again, it is an unconscious ego-defense whereby the total personality is saved pain by separating a chunk of it and transferring to it all those things disturbing the person. "If Thine eye offend Thee, pluck it out . . . "

It exemplifies the primitive ability of man to do with his personality what lizards and worms do with segments of their bodies: drop it off to prevent injury or capture of the whole.

Dissociation works against the cohesive force of integration and because of this, because also of its primitivity, it is most frequently employed by children, by illiterates and by the dull, and in some instances of psychosomatic breaks (viz. delirium.) It varies quantitatively, from molecular splitting (as in major hysteria) to atomic splitting (as in schizophrenia). It plays a healthy role in daily life and it aids the defense from neurotic conflict. The personality structure, favouring easy dissociation (hystrionic) is often called 'unstable' but it is obvious that a degree of instability or malleability is necessary for all adaptation. It is too often forgotten that the opposite of 'unstable' with his ups and downs who none the less bounces back is not the normal but the 'brittle' and rigid, who breaks and fragments.

7. *Displacement* is a related safety valve whereby excessive energy charged with anxiety is displaced from an important (but unbearable) object or situation and distributed to a less important one. It is seen in the rather uncivilised action of say a tired businessman, returning home to face an unwished-for party, unexpectedly arranged by his wife. He hoofs the cat as if by accident. Displacement is alloplastic, that is the person redistributes the mental charge from one object to another; whereas dissociation is autoplastic in that the person redistributes it from one part to another of his own mind (and/or body) and thus generally severs the tenous relation between conscious and unconscious systems.

8. *Denial* is the unconscious negation of an intolerable fact. It is used typically by children who thus directly exclude unpleasant memories. It is one of the reasons why it is so useless asking a child (accused by his elders)"Did you steal or did you do this or that?" At a particular age or time the child would truthfully (subjectively) give a peremptory no! despite having done it.

9. *Rationalisation* is a self-deceptive disposal of intolerable memories, motives and drives by cloaking them under the mantle of acceptable reasoning. It appeals to man's aspiration at being a voluntary agent, capable, at all times, of using his reasoning. There is at times such a thin line between this mechanism and genuine conation (thinking) particularly when employed by the very intelligent and well informed, that discrimination, even by another is difficult. It is for this reason that medical and allied personnel and those with some knowledge of psychology are so difficult to treat psychologically. Rationalization is seen, more fantastically and therefore obviously in the schizophrenic who ex-

plains his bizarre experiences through a system of abstruse philosophical or scientific ideas. Since there is no other way of dealing 'objectively' and learning about emotions, much of this very writing on "psychodynamics" and mental mechanism is rationalization.

10. *Symbolization* is the employment of an idea or object to represent another.

(a) *Psychic*. The source of such symbolization may be from the personal unconscious (Fairy and Old wives tales etc.) or the collective unconscious (the myths and images of the race not learnt directly in the course of a person's life). It is again a process employed in thinking and also in Art and much of Science. Its tools are words, numerals, musical signs, graphic signs or other symbols. The interpretation of symbols, created by man in various stages of civilization, even the current, found in dreams in doodlings or in the free expression of children, is a skillful study necessitating intuition, knowledge of comparative civilizations and their expression, and understanding of the psychological development of the mind and also self-analysis. For instance the many ways of symbolising birth: the stork, the mulberry bush, Zeus' head, the immaculate conception, and none more beautiful than Boticelli's "Birth of Venus", may occur in a patient's dream. The particular symbol must be diagnosed—that is not only identified but the specific negative factors which made the mind represent birth symbolically rather than directly must be recognised.

(c) *Somatic* symbolization is of particular interest to us in that the body becomes a resonator for feelings, conflictual and pathologic. Choreography and gymnastics are creatively expressive. But Job's dermatitis, (psychodermatitis); the spondylitis of a rigid personality; the headache of a person intellectually threatened; the hole burning in the alimentary mucosa of one emotionally starved and eternally avid for affection and angry at not getting it; blepharospasm of one who wishes not to see; the globus hystericus of one with phantasies of fellatio, are less creative but none-the-less useful modes of expression. Useful in that they protect the sufferer from the real conflict, yet give us a clue to what this conflict may be.

B. MECHANICS USED MAINLY IN ILL-HEALTH

1. *Conversion* is the transformation of mental pain and sickness into a set of bodily symptoms with resultant psychological ease. It is the mechanism of hysteria. It occurs in other phenomena of conversion, when a painful set of circumstances and ideas is transformed into something more bearable—such as a political, social or religious ideology.

2. *Complex* refers to a set of painful mental presentations (memories etc.) repressed out of consciousness but mani-

festing themselves in a distorted fashion, in symptoms. For the law of the mind is that, "What goes down (repression) must come up again!" Displacement, dissociation, symbolism and repression all play a part; any psychic symptom is rooted in a complex. Contrary to popular usage if a sense of inferiority is actually felt consciously it is not a complex; but the little 5 foot man who sets himself as a gauleiter of three secretaries and a teen-aged messenger boy probably does have an inferiority complex.

3. *A reaction formation* is the symptomatology of a complex. Example, a youth still unconsciously in love with his mother (Oedipus complex as in Hamlet's case) would seek a compromise in finding another woman, "nearly old enough to be his mother" to fall in love with.

4. *Negativism* is the tendency of a sick mind to oppose and deny any suggestions, counsel or order designed to help and yet threaten the apparent 'security' of the illness.

5. *Resistance* is the more generalized tendency of any mind, particularly the sick mind undergoing therapeutic analysis, to delving and to an outsider's attempt to bring about a change. So strong may resistance and negativism be, that under a self-destructive impulse they may result in *nihilism*—the very denial of the fact that the owner of the mind exists.

6. *Ambivalence* is the charging with equal emotion of opposing tendencies regarding the same person or object, at the same time. Thus loving and hating a person. When the charge is strong and equal, the ambivalent force may break up the cohesion in the personality structure—literally "torn asunder by feelings" or attitudes.

7. *Fixation* is an arrest of pyschological development at an immature, infantile level, viz. 'oral fixation' when the mouth with its eating, biting, speaking, singing, activities becomes a most important object of pleasure and endeavour—like with the Epicurians.

8. *Condensation* is the running in together of two ideas or symbols into one, with the specific purpose of obscuring the meaning (unpleasantness) of one of them. It occurs frequently in dreams and the statements of children and schizophrenics.

9. *Secondary gains* are those derived from the neurotic compromise of the illness. For instance the hysteric may gain attention and the depressive punishment. It must be remembered that the *major part* of the gain is not valued for its reality but for its imaginary goal.

10. *Transference* is the state of mind of the patient when he has transferred on to the therapist his tale of woe, his feelings and conflicts and when through this relationship, both aim to resolve the situation. It may be positive, negative or ambivalent.

11. *Counter-transference* is the therapist's state of mind when his emotions originally evoked by others in his own past or present, are transferred on to the patient.

This is a pernicious phenomenon, likely to lead to iatrogenic illness or chronicity in the patient. Clinicians, other than psychiatrists, are initially more exposed because they are less aware of the possibility of this occurrence; ultimately, however, owing to the greater intensity of the personal association, psychiatrists have to use their

skill and training to diagnose and resist counter-transference.

SUMMARY

This series of lectures was given with the purpose of acquainting you with some of the basic elements of the mind (that is psychodynamics and specifically mental mechanisms): It was delivered in the hope of what is more politely called "philosophy" by some and "jargon" by others, may become realities without which no true diagnosis is possible; hence no pathogenesis and no proper treatment would be possible. In order to familiarize you with this elusively abstract, none-the-less real phenomenology (happenings), psychophysical parallels or comparisons were frequently drawn.

In order to persuade you that *these notions*, and no compromises nor physical, concrete or 'objective' theories, were the direct paths to the mind, I served you with rather an elaborate introduction in which the latest 'organic' theories were refuted.

There are, in truth, no specialties in medicine since to know fully many of the most important diseases a man must be familiar with their manifestations in many organs.—OSLER.

ADDRESS TO THE MEDICAL GRADUATING CLASS AND THE CLASS OF 1903 (JUNE 16th, 1953)

F. C. A. JEANNERET*

When I accepted the invitation to speak to this distinguished group, the Chairman assured me that I might talk on any subject under the sun other than the practice of medicine. I propose to respect your injunction faithfully and literally, Mr. Chairman, for obvious reasons.

I am addressing myself to doctors this evening, medical doctors, and I will now violate my Hippocratic oath, if I may so term it, only to say that yours is the one profession in the world at which for more than half a century I have cast sidelong glances of envy. Far be it from me to subscribe to the definition of the practice of medicine, given by Lord Jeffrey, as "the art or science of amusing a sick man with frivolous speculations about his disorder, and of tampering ingeniously, till nature either kills or cures him." No, I hold in deep reverence the noblest vocation on God's earth, some few of whose ornaments over the ages have been Harvey, Lister, Rabelais and our own Osler and Banting. The last-named, of blessed memory, would sympathize with me this evening. I remember his telling me once how panic-stricken he was when he woke up one morning to find that as a result of something he had had a hand in, he would be called upon to make some public speeches. "Only then," he said, "did I realize how completely ignorant I was of what I now know is called the King's English." Just such a sense of modesty overwhelms me after listening to a spate of eloquence over the past fortnight rarely, if ever, equalled in my half-century at this University, and not the least admirable of which was an after-dinner speech of your own Dean of Medicine, some ten days ago, one of the wittiest indeed, and hence one of the wisest it has ever been my privilege to hear. Any attempt I might make to emulate it would be nothing short of a gruesome anti-climax. Indeed I have so great sympathy with the meek who suffer and endure while would-be orators seem to enjoy themselves, that before indulging in this recreation myself, I shall relate, in case you have not read it, a very short story I came across last night in the current number of *Maclean's*—this for your protection: The chairman rapped for order while the restless crowd suffered a long-winded after-dinner speaker. A man who sat very near the chairman was hit on the head by the gavel. He muttered: "Hit me again. I can still hear him."

So with this self-imposed 'caveat', as I think the President would term it, I will ask you to bear with me for a few minutes while I give a little serious consideration, not to the practice of medicine or even to the doctor, but to the man, the man behind the doctor.

If I may paraphrase Thomas Mann, interest in disease and death is only another expression of interest in life, as is exemplified by that body of humanists, the faculty of medicine, which addresses life and its ills always so politely in Latin, and which is only one part of that great and going concern which, in all sym-

*Principal, University College.

pathy, I now name by its name: the human being, the delicate child of life, man. (I don't think I have really taken too much liberty in my translation.)

A man for whom the proper study of mankind is man is said to be a humanist. Surely the prince of humanists, according to this definition of the term, is the medical doctor and who in all mankind has a better opportunity for a microscopic analysis of the human animal, physically, mentally and morally, than has the medical practitioner? My own doctor father-in-law, (whose father might still be remembered by some of the class of 1903 as Dean Geikie of the old Trinity Medical School) used to say indeed that whereas a minister of the Gospel knows men at their best, and a lawyer knows men at their worst, a medical doctor knows men as they really are.

Among the other connotations of the term 'humanist', the most common is perhaps 'a student of literature', formerly ancient and classical, but in present-day usage 'modern' as well. I would say that the successful medical practitioner, who is at the same time a true humanist in the senses mentioned, should be the happiest man in the world, especially if in addition he has the friendship of a few select companions.

I wonder if any man living in our time personifies better than does Dr. Albert Schweitzer all that the true humanist stands for. That great Alsatian humanitarian who has attained world-wide distinction as a theologian, as a philosopher, as a musician, and as a physician, and as a prolific author of outstanding studies in each of these separate domains, has gladly dedicated his life for the last forty years to the natives of French Equatorial Africa, practising the Christian ideal as well as teaching it in his large hospital in Lambaréné, treating some 3000 patients a year, over 300 of whom are resident lepers. Yet *le grand docteur*, as the natives call him, finds time to read and write, dine and chat with his countless devoted friends, white and black, play by the hour on his specially constructed piano, with pedal attachments, given to him by the Paris Bach Society in 1913, and he finds time to feed, play with, and pat the noses of his many four-legged friends, a contemporary St. Francis of Assisi among his pet antelopes, dogs, cats and goats. On the threshold of eighty years, this versatile physician of men's bodies and souls, still finds time for study and reflection. A profound Christian, Schweitzer is not exactly orthodox, but he has a deep reverence for life. This simple man knows nothing of race prejudice. He loves whatever is beautiful and good, and lives the thoroughly happy life of the true humanist.

The way of life of Dr. Albert Schweitzer, humanist-physician par excellence, is an open book from which we can all read and learn. And I would make a plea to the members of the class of 1953, thinking solely of your own ultimate 'peace of mind', the only proper synonym for human happiness,—and in this I am certain that I have the approval of the youngsters of the class of 1903—don't get so caught up in the maddening round of your daily medical practice that you have no time left for reading and reflection, or you will become a meaningless machine, and life itself will become desperately dull for you. A friend of mine, a doctor, told me recently that he was just so busy that he had not been able to read a book for years. He didn't need to tell me. The only escape the poor fellow has from the grind of madding wheels is the all-too-frequent cocktail

party, a poor substitute for the intellectual stimulus he would derive from reading a worth-while book occasionally. Please don't think I am preaching. I speak feelingly, as in the last few years the tempo of my own life has been so changed that it is only with the greatest difficulty that I find time for reading, and when I do, it is only too frequently when I should be sleeping.

Unless a man lives in the world of ideas, for at least part of each day, he will go to seed intellectually and spiritually. If I may presume to give counsel, I would say: Make immediate acquaintance with the great thinkers of all time. Don't just read about them. Read them directly, in translation if necessary. Plato, Dante, Montaigne, Shakespeare, Descartes, Goethe, though they wrote centuries ago, are still very much alive, of immediate and vital significance, and they deal with the eternal problems of mankind. Besides, they are infinitely more interesting than any movie or comic. The world of ideas, we read in Plato, is the source which gives life and significance to the world of the senses. If you would really learn what were the ideas that dominated any age in world history, read the great writers of that period. If I may draw upon my own special sphere of interest, I am convinced that Molière, Voltaire, Jean-Jacques Rousseau, Diderot, Renan and Hippolyte Taine are more important to the understanding of France than are all the military marshalls, magnates and moguls of their day.

A medical doctor has a unique opportunity of becoming a leader in the public life of his community. Unfortunately, the nature of your profession, as of mine, makes it difficult for most of you to play a leading role in the higher councils of the nation, though there have been notable exceptions. There were only seven doctors in the Canadian House of Commons at the time of the recent dissolution. This is a great pity; and I fear that with the ever-increasing accentuation on specialization, there is little likelihood of any greater medical representation in parliament in the near future. Perhaps I am unduly pessimistic. But in the political thinking of your immediate circle, and certainly in the more local field of politics, you can and should make a very important contribution indeed.

To take an intelligent interest in politics of any kind, you must have an intimate understanding of history. The future is only the past again, entered through another gate. In this connection, I have no hesitation in commending to you the most important book I have read in the last year, at least, *John A. Macdonald* by our own Donald Creighton, said by a recent reviewer in the *Spectator* to be one of the six greatest living historians in the English language. This single volume opened up for me an era in Canadian history, the evolution of its thinking, its prejudices, its political complexities, the purely human factors, the interregional, intermunicipal, and interdenominational animosities and feuds, romance and tragedy—in a word, all those elements essential to a captivating masterpiece of fiction, even dramatic suspense; yet historically accurate to the last minute detail, not idealized, every item cumulatively significant, unfolding with the gradually developing personality of the young politician, whose weaknesses are at least as endearing as his virtues, the slowly emerging nationhood of a one-time sprawling group of British North American provinces. Never before have I been made aware of how much our

country owes to the dream of this first Canadian Prime Minister, who was much too human to be thought a genius, but whose very humanity proved to be a national asset of real magnitude. And if the Conservative Party would like again to win Dominion elections, let it give careful study to the political acumen of Sir John A., especially to his sense of timing. He knew on what to swoop in order to gain political advantage,—and when. The Conservative Party still had sense enough in 1911 to follow closely all the tactics he had used so successfully in his last election of 1891 on the same issue of reciprocity, and, in particular, his skill in reconciling disparities of aspirations and interests. The first volume by Creighton has to do only with the life and times of the young politician. The climax of its theme is reached on Wednesday, February 27, 1867, the day after the first reading of the British North America Bill in the House of Commons, when Macdonald is given a private audience with the Queen. Note the simple dignity of the author's description, and finally the insight of the true historian:

'There was nobody in the big room but Princess Louise, and Lord Carnarvon, and the small figure with the grave face and the sombre garments. He knelt and kissed the Queen's hand. She told him that she was glad to see him on this mission, that she realized the importance of the bill he was sponsoring, and that she was aware of the loyalty that the British North Americans had shown. "We have desired in this measure," he replied, "to declare in the most solemn and emphatic manner our resolve to be under the sovereignty of Your Majesty and your family for ever." It was only a sentence; but if he had been asked to state the political purpose of his life in a single sentence he could hardly have done better. Then the audience was over, and he bowed his way out.'

That passage is from the last few pages of Volume One. I can hardly wait for the second volume to appear. I heartily endorse Emerson's statement that "there is properly no history, only biography", and I am equally in agreement with Carlyle's claim that "biography is the most universally pleasant and profitable of all reading".

Lest anyone imagine that the unique appeal this extraordinary book made to me was inspired by some innate political sympathy, I may say that the only other Canadian biography that ever impressed me in any comparable fashion was Skelton's *Life and Letters of Wilfrid Laurier*. No, I have no shibboleth to utter for any one political party. Though I had the good fortune to hear Sir Wilfrid introduce his successor when the young Mackenzie King made his first political speech in 1908 and to attend the convention that first nominated him, I have never hesitated to exercise the democratic privilege of changing my political allegiance whenever my head and conscience have so dictated. Call me a mug-wump, if you like. After all, it is difficult to catch up with any party, now that they are all vying with each other in protesting how progressive they are. Surely there is something a little ridiculous about the Manitoba situation, at least, where they now have Progressive Liberals, Progressive Conservatives, and Labor Progressives (so called). The one party that knows it is the most progressive of all doesn't add the popular handle to its name, and, fortunately or otherwise, most of us have long since forgotten what the letters CCF do stand for.

I have addressed my remarks almost entirely to the graduating class; not, however, because I subscribe to the notion that the class of 1903 would be immune to any suggestion. I am too near the same vintage myself not to be a little sensitive to the claim of the physiologists that the tendency of old age is to form bone, and hence that it is rare to meet even an elder statesman whose opinions are not ossified. I would be more willing to accept as valid a French proverb that says "the evening of a well-spent life brings its lamps with it". And to prove that a near-centenarian who has naturally read more French literature in his life-time than that of all other languages combined, is still able to find himself in agreement on occasion with a German, in this case the great Goethe, I too would say "It is only necessary to grow old to become more charitable and even indulgent. I see no mistake committed by others that I have not committed myself." At any rate, in a country such as ours, charity and tolerance are essential, qualities indeed of top priority.

In concluding, may I commend again the two books I have mentioned, Creighton's *Macdonald* and Skelton's *Laurier*, to anyone who has any interest whatsoever in his own country's past and future. Together,—and of course they overlap significantly,—the lives of these two nation-builders span a little more than a century of as important a phase as any in our nation's history.

And may I now quote, again especially for the members of the Graduating Class, the final words of the last speech but one delivered by Sir Wilfrid Laurier, addressed to the Young Liberal Association in London in November 1918, just a few weeks before he died, as meaningful today, at least, as when uttered thirty-five years ago:

"As for you who stand today on the threshold of life, with a long horizon open before you for a long career of usefulness to your native land, if you will permit me, after a long life, I shall remind you that already many problems rise before you: problems of race division, problems of creed differences, problems of economic conflict, problems of national duty and national aspiration. Let me tell you that for the solution of these problems you have a safe guide, an unfailing light, if you remember that faith is better than doubt and love is better than hate. Banish doubt and hate from your life. Let your souls be ever open to the promptings of faith and the gentle influence of brotherly love. Be adamant against the haughty, be gentle and kind to the weak. Let your aim and purpose, in good report or ill, in victory or defeat, be so to live, so to strive, so to serve as to do your part to raise ever higher the standard of life and of living."

These words of counsel were among the last uttered by that near-saint among politicians, whose political leadership so many of us had to abandon finally, but regretfully. Whatever be your own political leanings, read both sides. Seek truth wherever it may be found and wherever it may lead. Don't join the book burners; do join the book readers.

FEATURE

DEFENCE MEDICAL RESEARCH

Medical research is playing an increasingly important role in the present programme aimed at expanding the overall efficiency of Canada's military defences.

The Defence Research Board, created in 1947, is responsible for meeting the research needs of the Armed Forces, including those related to the medical sciences. Described frequently as "Canada's Fourth Service", the Board was designed to fulfil Canada's particular defence requirements.

The Chairman, Dr. Omond M. Solandt, is a distinguished Canadian scientist who became widely known during World War II for his activities in the field of operational research. A graduate in medicine from the University of Toronto, he had established for himself a well-known position in the field of physiology before diverting his attention to the general scientific field associated with national defence.

The Defence Research Board maintains an intra-mural programme of scientific investigations in many fields in its own establishments. It supplements this programme as well by grants-in-aid to support specific research in Canadian universities.

In the field of medical sciences, the Defence Research Medical Laboratories is the Board's principal intra-mural seat of scientific medical investigation.

New permanent buildings were opened recently at Downsview, near Toronto, for this establishment. They were designed to provide the most modern facilities for all phases of the laboratories' work.

Directing activities is M. G. Whillans, M.D. (Tor.), an experienced medical scientist and formerly Professor of Pharmacology at Dalhousie University. Staff members have been trained in a wide variety of special fields. Their backgrounds are particularly valuable because of the laboratories' concern with medical scientific research in the widest sense and in particular, with the problems of the fit man in the military environment. The establishment deals with a multitude of specific problems, many of them referred to the Board by one or more of the Armed Services.

One scientific group is investigating the difficulties associated with the attainment of high altitudes and those connected with exposure to increases in the force of gravity. Both studies are of mounting importance in these days of high altitude jet flights. High altitude research has revealed among other things, interesting changes in peripheral circulation apparently due solely to the decrease in atmospheric pressure.

Another team has reported on the prosaic but important problems of the load carried by the infantryman. A "sonics" section is studying intelligibility difficulties in communications, especially those conditioned by noisy environment and at high altitudes. A clothing section staff investigates the fundamental properties of textile materials as they relate to various military requirements.

The toxicology section, in association with the Defence Research Chemical Laboratories near Ottawa, is dealing with the defensive aspects of chemical warfare. Another section has made recommendations to ensure that human physiology and anatomy are considered during the designing of military equipment.

The food section develops special ration packs for the R.C.N., the Army and R.C.A.F. Several have been designed especially for use in lifeboats and for survivors who have baled out of aircraft.

The section studying motion sickness problems has advanced a number of interesting observations on the value of head rests in minimizing the severity of the ailment. Unique equipment, designed by the staff, is playing an important role in continuing motion sickness studies.

Work on radar operator efficiency is of particular value to the Armed Services. Studies have been carried out on the factors which cause errors, means of avoiding them and other measures for increasing the efficiency of operators.

Special sections deal also with vision problems, work methods, and personnel selection and training as they relate to the requirements of the Armed Services.

Defence Medical problems are either the specialized aspects of general medical problems, or closely related to those dealt with in other forms of medical research. Consequently a great deal of medical research is sponsored by the Defence Research Board in Canadian universities.

Most of the extra-mural research grants are allocated to individuals in Canadian universities seeking financial assistance for staff and equipment and pursuing research bearing on defence requirements. Their work varies from what might be considered almost entirely applied research, to that largely basic in nature. Certain other fund allocations finance investigations in fields with special defence implications, such as radiation and cold studies.

An inter-departmental co-ordinating committee ensures that there is no overlapping of activity in medical scientific research. It exists to advise the Board on matters of policy and to keep other Government agencies aware of defence research requirements. The committee consists of the Directors of the Medical Services for the Navy, the Army, and the Air Force as well as representatives from the National Research Council, the Department of Veterans Affairs, Department of National Health and Welfare and the Board itself.

The importance of this committee's deliberations cannot be stressed too highly. For example, a participant in its activities is a Department of Health and Welfare representative whose organization is responsible for Civil Defence, a subject that affects vitally all Canadians.

In addition, a Defence Medical Research Advisory Committee functions in an advisory capacity to the Defence Medical Research Co-ordinating Committee and to the Defence Research Board. It is made up of:

(1) the members of the Co-ordinating Committee,

(2) a scientific representative of each of the departments with membership in the Co-ordinating Committee,

(3) the chairmen of all Defence Research Board Medical Research panels,

(4) a maximum of three members-at-large.

In accordance with the constitution, the chairman of the Defence Medical Research Co-ordinating Committee chairs as well the Defence Medical Research Advisory Committee. The present chairman is Professor Charles H. Best, C.B.E., M.D., D.Sc., F.R.S., of the University of Toronto.

For advice on the suitability of applications for grants-in-aid and for guidance in various specialized medical scientific fields, the Defence Research Board has set up a series of panels. Their members deal with about 16 particular medical research specialties. The panels not only provide advice on research projects, but extend also expert information on specific problems referred to the Board by the medical departments of the three Armed Services.

The Board's range of interest in the medical sciences is indicated by its list of advisory panels. They are:

Panel on Antibiotics
Panel on Arctic Medical Research
Panel on Auditory Problems
Panel on Aviation Medicine
Panel on Blood Substitutes and Blood Products
Panel on Blood Transfusion and Preservation
Panel on Coagulants and Anti-coagulants
Panel on Frostbite and Immersion Foot
Panel on Infection and Immunity
Panel on Management and Burns and Wounds
Panel on Motion Sickness
Panel on Nutrition
Panel on Psychiatric Research
Panel on Radiation, Protection and Treatment
Panel on Toxicology
Panel on Visual Problems

The chairmen of these bodies are selected from medical scientists with special training and experience in a wide variety of fields and a knowledge of Service and defence problems. All are attached to medical schools, hospitals and research institutions across Canada.

In establishing this all-embracing type of organization, carefully planned provision has been made for the rapid expansion of Canada's medical research facilities in the event of a full-scale war.

The current and future medical investigations being sponsored by the Defence Research Board in its own medical establishment, in Canada's universities and from the preparations set up to meet possible future crises, are all beginning to prove advantageous both to military personnel and civilians alike.

Superfluity of lecturing causes ischial bursitis.—Osler.

CIVIL DEFENCE ORGANIZATION IN CANADA

G. E. FRYER, M.D.*
and
F. C. PACE, M.D.†

THE requirement for a Civil Defence organization on this continent arises from several causes; e.g., several nations possess weapons of great destructive power, weapon-carriers of long-range have been developed and the urban centre has become a normal target in war. Some types of mass destructor weapons are purely anti-personnel weapons and others could be exploited as destroyers of cities. In the first group are the chemical weapon, the biological weapon and the radiological weapon (as distinct from atomic blast weapons); in the second, the atomic bomb and thermonuclear weapons, high-explosive bombs and incendiary projectiles.

The development of the modern nerve-gases has made chemical attack against this country feasible. Formerly such attack was considered unlikely because the large quantities of such agents as mustard gas needed to produce a worthwhile effect would have made the method uneconomical. However, nerve-gases are effective in very small quantities, their normal action is to cause death or severe incapacity within a short time and their presence is difficult to detect; so that their use might be thought worthwhile by an enemy who wished an anti-personnel action which would leave important structures and installations intact. The nerve-gases have never been used in war but they are well-understood and their capabilities can be forecast reasonably well.

The potentialities of attack by biological agents (pathogenic organisms and toxins) and by dissemination of radioactive material (radiological warfare as contrasted to the use of atomic blast weapons) are less clearly-defined. In regard to the former it would appear difficult to institute at will a true epidemic in a human population though it is conceded that small groups of people, (especially those brought into direct contact with pathogenic material) might be affected. For the latter, the distribution of radioactive contaminants over a large area is described as a relatively-remote threat, largely for technological reasons.

The atomic bomb produces casualties by trauma, heat and ionizing radiation. Ordinary injuries and burns were the predominate effects on personnel at Hiroshima and Nagasaki but appreciable numbers of the surviving casualties displayed radiation sickness (acute radiation syndrome) as their presenting condition and there is small doubt that many injured and burned persons were adversely affected by superadded irradiation. The outstanding feature of the casualty-problem in the Japanese target-cities was not novelty but the fact that injuries occurred in large numbers

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within a short space of time. A mass-attack by incendiary and high-explosive projectiles could create an analagous problem in medical administration.

Some indications of the effects of atomic and other more "conventional" forms of attack on Japanese cities may be gained from the following table. One should remark, however, that in none of these cities were there organizations adequate to meet the weight of the attacks. Had Civil Defence been on a sounder basis loss of life and property-damage would have been much reduced.

	Hiroshima (A-bomb)	*Nagasaki* (A-bomb)	*Tokyo* (Incendiary and HE)
Population	300,000	200,000	6,780,000
Deaths	70,000	36,000	83,000
Injured	70,000	40,000	102,000
Sq. miles destroyed	4.7	1.8	15.8

(All numbers approximate)

The aim of the Civil Defence Health Planning Service is to reduce the effects of attack on civilian populations. The service is closely integrated at all levels of government with other components of the Civil Defence Organization, e.g. firefighting, rescue-service, police, voluntary aid societies; to name a few; and to accomplish its aims is organized in the following manner:

At each level of Government there is a Director or Coordinator plus the heads of all the various services who have the plans of their respective divisions reported through them, to the Coordinator. Civil Defence Planning does not envisage the use of paid officers but in all phases it tries to work through existing organizations and agencies. In line with this thought, Health Service Planning is largely the responsibility of the respective Departments of Health, although for specialist advice they have leaned heavily on the local nurses' chapter and medical academy.

In Canadian planning, the provision of First Aid and the transporting of casualties are also under the jurisdiction of the Health Service. To assist in First Aid and home nursing instruction, both St. John's Ambulance Association and the Red Cross, who had pre-existing courses in these fields were asked to help train interested workers.

Health Planning must be wide in scope as it must cover not only casualty services but medical treatment for critically ill non-casualty cases, restoration and maintenance of public health services, and other preventive and supportive services designed to bolster the morale of the people in time of crisis. While we must always have in mind the planning necessary for a large scale disaster, we can also alleviate suffering by having trained personnel available for natural disasters of lesser magnitude.

The Federal Government, aware of its responsibility to the people of Canada, has decided that the stockpiling of medical supplies is their specific problem. It can be stated that this purchasing program is well advanced and depots for storage have been strategically placed across the country.

It becomes increasingly evident that certain areas in Canada would appear to be extremely vulnerable to attack, and a planned attack might be perpetrated against them because of their large population or because an area makes or uses some strategic material. In Civil Defence parlance, these are called Target Areas.

Around each of these centres is a zone of approximately 50 miles radius which

would be expected to help the stricken city just as aid is promised in natural disasters. This is called a Mutual Aid Area and would supply both material and personnel to aid in the city's rapid rehabilitation.

The rest of Canada (Reception and Mobile Support Area) would be used to receive casualties and homeless from the overtaxed target centres, following along the lines of dispersement found so practical during fires and floods. The areas must also aid in the personnel support program.

One of the interesting points of the Canadian Program is that because of the relative shortage of doctors and nurses many of their normal peace-time duties will have to be delegated to less well trained individuals and nurses'

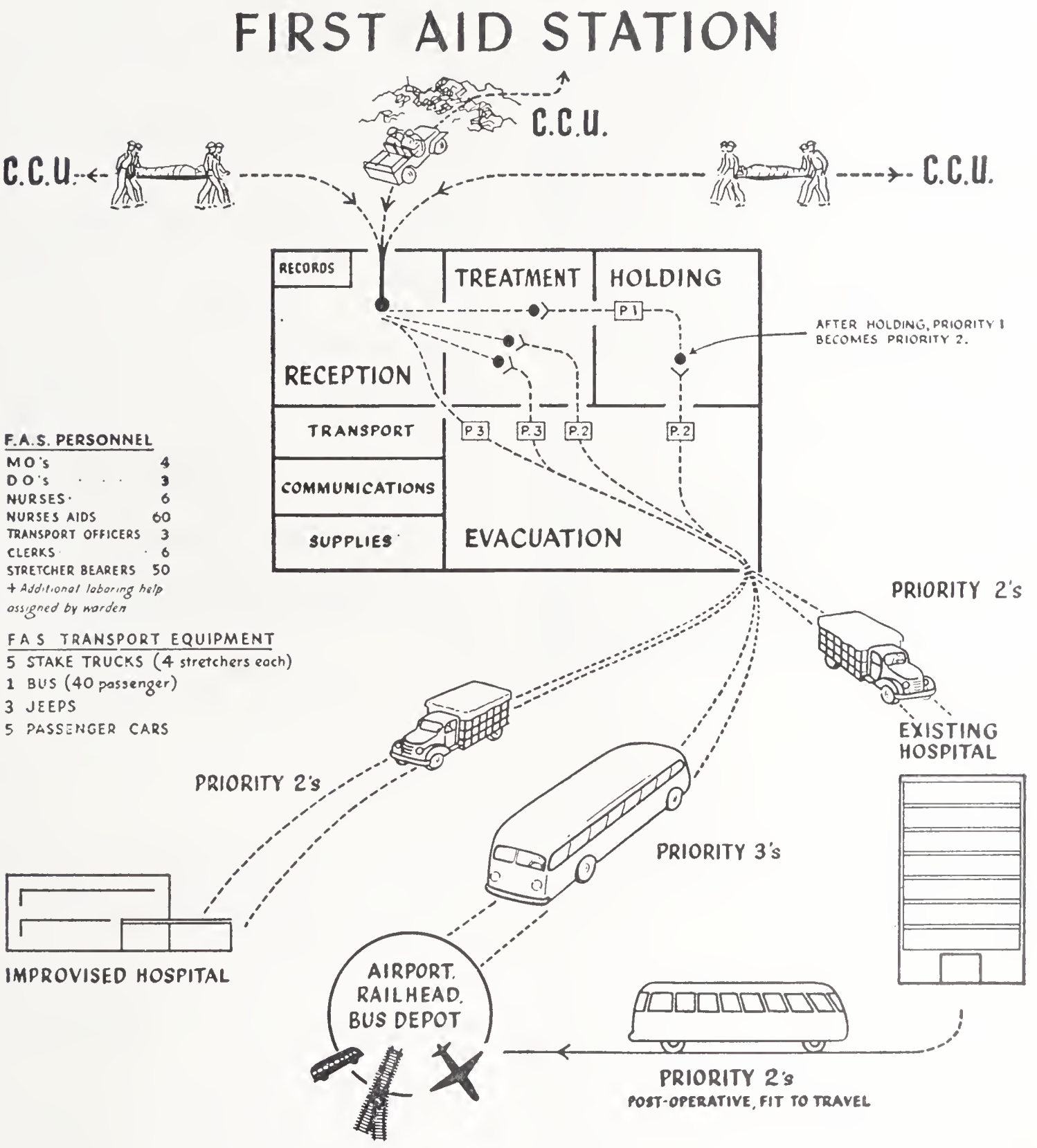

FIG. 1

aides, in catastrophic times. It is planned that doctors can best be used on the fringe areas of disaster rather than right in the area. They will, therefore, set up a unit called a First Aid Station (Fig. 1) in a partly usable building on the edge of the rubble. Obviously, some help has to be given to those in the debris areas and this is done by means of a unit called a C.C.U. (Casualty Collecting Unit), which consists of well trained first aiders and stretcher bearers.

One of the important jobs at the First Aid Station will be the sorting of cases as to their need of treatment. Roughly, casualties will be divided into Priorities I, II, or III, and Priority I will be those that need resuscitation and early surgery. Priority III are those cases that do not require immediate surgery, and depending on the exigencies of the service, may be transported some little distance.

Hospitals will be the focal points of casualty care but the size of their staffs may more than complete a first phase staffing of operating rooms. Trained men and nurses may be detached from the main hospital to work in nearby buildings that are suitable (e.g. large bright rooms, water and electricity), or be sent off to form an improvised hospital in another area. Canadian thinking is that such a unit would be staffed on the basis of giving service to 200 patients. It would seem necessary if pre-planning is adequate that staff allocations and inspection of proposed sites for improvised hospitals should have early consideration.

A great deal has been accomplished in the development of the Civil Defence Organization and in training of instructors, workers and professionally-interested groups. Enrolled Civil Defence workers in Canada now number upwards of 133,000 and with the establishment of the Federal Civil Defence College, 1500 key workers and instructors can be trained annually. Through various agencies, considerable numbers of physicians, dentists, nurses, veterinary and agricultural scientists have been indoctrinated. Extensive Civil Defence exercises have been carried out in several key communities and interest has been stimulated by the efforts of the press, professional and public and of many service clubs and professional associations.

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EDITORIAL

In Conclusion

In this, the last issue of Volume XXXI, we would like to express our gratitude to all those who have made possible the publication of this Volume of the Journal.

First we thank all the students, graduates and members of the Faculty who gave so freely of their time in order to write articles.

Although the Journal got off to a late start this year due to the paucity of material at hand, we are indebted to the Associate, Assistant and Abstracts Editors and to all those whose names appear on the masthead for their untiring efforts which have kept a constant supply of copy available.

To the Managing Editor and the Circulation and Advertising Managers we are especially grateful for the fine way in which they handled and contributed to the finances of the Journal which have been strained at times during the past year.

Special thanks are due to Mr. Hart of the T.G.H. Lecture Theatre for his many services and to Mr. Hall of the University Press for his interest and unfailing help in the production of this volume.

Finally, we would like to welcome Mr. J. W. Goodwin who will edit Volume XXXII; having heard only some of his plans for next year, we are assured that Volume XXXII will be better than ever and of interest to all.

Journal Award

The staff of the Journal is pleased to announce that the award for the best student article appearing in the 1952–53 Volume has been given to Mendel Bocknek, 5T4 for his artcile "An Airforce Summer Interneship".

CHANGING VIEWPOINTS IN OBSTETRICS AND GYNAECOLOGY

W. PELTON TEW,* M.B., F.R.C.S.(Edin. & Can.), F.R.C.O.G.

THE PRE-NATAL PERIOD

TIME has simply emphasized the value of adequate pre-natal care. Meticulous supervision throughout pregnancy pays great dividends to all concerned. The visits of the patient to her physician must be regular and the physician's examination thorough. The chief points we are concerned with are: (a) a general history; (b) a general physical examination; (c) an obstetric history and (d) an obstetric examination. Each follow-up visit of the patient includes the following: (a) weight; (b) blood pressure; (c) urine analysis; (d) haemoglobin; (e) size of uterus; (f) size and position of baby and its heart rate. The pelvic measurements are taken fairly early in pregnancy. These measurements include: (a) external; (b) internal measurements. An X-ray of the baby and mother's pelvis should be taken in all questionable cases. Pelvic X-ray measurements are only of value when properly taken and then interpreted properly by a conjoint study of the plate by both the radiologist and the obstetrician. Minor pelvic defects are very difficult to assess from an X-ray plate, and hence the value of applying your clinical sense to the X-ray picture.

The value of a well balanced diet throughout pregnancy is of great importance. A written copy of a suitable diet is of more help than a verbal description of the diet you wish the patient to follow. The patient should be advised to live a reasonably normal life throughout pregnancy. Cigarettes should be reduced to not more than four or five per day. Emotional strains should be avoided as much as possible.

The physician who is too busy to give adequate time for good pre-natal care should rearrange his work so as to be able to give these patients a proper share of his time. In these days of stress and strain and hurry we can easily get into the habit of hurrying our patients through the office, and in the end all concerned will be dissatisfied.

Laboratory Work — Each patient should have her routine blood work done: (a) haemoglobin; (b) blood Wasserman; (c) Rh Factor; (d) any other specific tests to be done as needed.

The Rh Factor—There has been far too much talking and writing, particularly among the lay people and press, about the Rh Factor. We ourselves know very little about this and hence it is time to call for a stop on the Freedom of Speech about the whole business of the Rh Factor. Boiled down, we may simply say that only about five per cent of the Rh Negative mothers married to Rh Positive fathers ever have serious trouble with their offspring after the first pregnancy. A percentage of this five per cent group we know we may salvage by the proper use of either repeated transfusions or by replacement transfusion. We also know that we cannot salvage any more

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of the possibly involved babies by inducing premature labours or doing premature Caesarean Sections for them. By doing so we have found that we lost many of these babies through prematurity alone, which otherwise might have survived. Besides this, we now know that the premature baby born of such parents is much more susceptible to Kernicterus than the full time baby is. Hence we now let these mothers go to full term and hope for the best. There is nothing so far known that we could give the mother to prevent foetal damage. We are apparently at the mercy of the placental barrier to protect the baby. We also know that a mother may have one or more erythroblastotic babies and still end up with a normal baby later on. This last possibility is not great, but it is still there. This point makes us hesitate indeed to encourage sterilization of such parents or to do a therapeutic abortion for such a patient.

External Version—If this can be done easily in the seventh or eighth month it is worth while, otherwise I would leave the baby as a breech and try and find out why it is a breech. I would not try vigorously or use an anaesthetic for such a version.

LABOUR

The time factors of labour are of first importance for us to keep in mind. The First Stage of labour for a primipara lasts an average of ten to twelve hours, and for a multipara six to eight hours. The Second Stage for the average primipara is fifty-five minutes and for a multipara about twenty minutes. The Third Stage for either lasts an average of five to ten minutes, depending somewhat on whether ergot or pituitrin is used to assist the Third Stage.

Sedation—There is still no ideal sedative for use during labour. The following plan is useful: (a) Use as much of the Grantly Dick Read plan that you have time for; (b) Heroin gr. 1/12 with sodium amytal gr. 3 when the pains are about six to ten minutes apart, or demerol 100 mgm. Follow this with Trilene Gas to be used by the patient until her final delivery. Nisentil 60 mgm by muscle is useful. For the actual delivery of the baby one may use one of the following: (a) Gas Oxygen Anaesthesia; (b) Local Novocaine; (c) Ether. Indications for the use of a local injection of ½ per cent novocaine: (a) Breech delivery; (b) when the patient has had food within the last four hours before delivery; (c) when the patient has a cold; (d) for the delivery of a premature baby.

Rectal vs. Vaginal Examinations

The rectal examination is quite all right for ordinary purposes, but fails to give you important information in all cases of doubt. I therefore highly recommend a vaginal examination whenever there is any doubt regarding the position of the baby or the progress of labour.

Episiotomy

This should be done whenever indicated for normal presentations and full term babies. The specific indications for an episiotomy are: (a) a Breech delivery; (b) premature birth; (c) a very large baby; (d) face presentations and persistent occiput position cases when head is being delivered face to pubes. A medio-lateral episiotomy is safer in average hands than a medial one. Plug the wound to prevent blood loss. The average blood loss from an episiotomy is 250 c.c.

Low Forceps

We now know that routine low forceps should not be done, but should be used as indicated. The head should not be left in the perineum longer than thirty minutes.

Third Stage of Labour

When the head is crowned at the vulva I personally give the patient 2 ampules of 0.5 mgm methylergobasine or ergometrine intravenously and find this will separate and expel the placenta in three to four minutes. It also reduces the blood loss to about one-half the usual amount. This gives you a dry area for stitching up the perineum. The same amount of ergometrine may be given intramuscularily just as head is being born, but the placenta will be a little slower in coming away. Manual removal of the placenta is seldom required when the above technique is followed. The placenta should be manually removed: (a) when there is unusual bleeding in the Third Stage and (b) if the placenta is not away at the end of an hour after the birth of the baby.

Induction of Labour

Induction of labour is much less commonly done now than in previous years. This is because on the whole the results of induction were not good, particularly when the inductions were done willy-nilly. The following is a brief summary regarding induction of labour:

1. Indications:

   There must be a justifiable reason for the induction such as: uncontrolled toxaemia of pregnancy, selected cases of accidental haemorrhage.
2. Contra Indications:
   (a) Postmaturity (usually) because true postmaturity is rather rare.
   (b) For the convenience of the physician or the patient.
3. Factors which should be present for an induction of labour:
   (a) No gross pelvic disproportion.
   (b) Cervix reasonably well ripened. The vaginal aspect of the cervix should be not more than 1 cm. long and the external os should admit the tip of a finger easily.
   (c) The presenting part should be well fixed and preferably a head presentation.

Methods of Inducing Labour

1. When the head is well engaged and cervix ripened: Simply rupture the membranes and wait for labour to set in. If labour has not started within eight hours you should start an intravenous pituitary drip, using 1 c.c. of pituitrin to 1500 c.c. of 5 per cent glucose in water. The rate of flow should be 20 to 30 drops per minute.
2. When the head is not well engaged and the cervix not well ripened: Use the pituitrin drip cautiously. This may not initiate true labour, but it will nearly always establish pseudo-labour pains and result in better engagement of the head with a more ripened cervix. Following this you may then safely rupture the membranes and labour will follow.

OBSTETRIC FORCEPS

Low Forcep Operations—This operation is a common obstetric procedure and is relatively safe, but should not be a routine because many patients would deliver spontaneously and easily if given a chance.

Mid Forcep Operations—This operation is fast losing ground because it involves rather serious dangers for both baby and mother. Whenever one is faced

with the possibility of a mid forcep operation we should check again the reason for the delay, and after doing so and we decide that assistance is definitely indicated, we have one of the following plans for adoption:

(a) Pituitrin drip by vein; (b) Caesarean Section; (c) Mid Forceps.

Pituitrin drip by vein is indicated when there is no gross disproportion and the pains sluggish.

Caesarean Section is indicated whenever there is gross disproportion and the labour pains are good.

Either of these procedures are safer and better than Mid Forceps. By adopting such a plan we will in the future be using Mid Forceps much less frequently than in the past.

PELVIC DISPROPORTION

The use of the X-ray in obstetrics is helpful whenever we have two things present—(a) a good picture; (b) proper interpretation of the picture. The simpler the method used the better. There are several techniques in use and in proper hands any one will give satisfaction. One of the simplest and most helpful techniques I know of is here outlined.

Pelvic Inlet

Normal is	10.5	cm.
Should not be under	9.5	cm.

Mid Pelvis

Transverse	10.5	cm.
Posterior Sagittal	5.0	cm.
Normal is	15.5	cm.
Should not be under	13.5	cm.

Pelvic Outlet

Posterior Sagittal	10	cm.
Transverse	8	cm.
Normal	18	cm.
Should not be under	15	cm.

POST-PARTUM PERIOD

Bed Exercises—These are much more important than early rising, and when used together are invaluable. A suitable plan is to have the mother carry out the bed exercises from the first day onwards and allow her up when she feels like getting up, e.g., on the third or fourth day or sooner if she wishes to. There are three simple bed exercises for the post-partium mother: 1. bicycling; 2. foot flexion; 3. deep breathing. These should be carried out regularly every four hours during the day. She may use a shower from the second day on and have bathroom privileges from the third day on if she wishes.

Drying up the Breasts

Too much of this is being done, but it seems difficult to stop it. The usual plan is to reduce fluids, fit a snug but not a tight breast binder and give the mother 5 mgm. of stilboestrol t.i.d. for one week and 5 mgm. b.i.d. for one week and 5 mgm. once daily for one week.

Allow the patient home in about one week and have her report by telephone once a week. She should have a general check-up when the baby is six weeks old and again when it is six months and twelve months old.

COMPLICATIONS OF PREGNANCY

Vomiting of Pregnancy

Severe vomiting of pregnancy is much more rare to-day than it was a few years ago. When a rather severe case occurs a plan of treatment as follows may assist considerably. Over fifty per cent of severe cases are associated with an allergic factor:

1. 60.7 per cent are allergic in origin.
2. 17.9 per cent are neurotic in origin.

3. 21.4 per cent are of unknown origin.

Treatment

1. Bed rest preferably in hospital.
2. Urine and blood studies including the histaminolytic index.
3. Try the usual methods of treatment for the first week, and if this fails try the following:
   1. On the seventh day give 100 mg. of antistine twice daily for seven days.
   2. Give 5 mg. of perconten by vein twice daily for three days.
   3. If no improvement in a week the patient does not likely belong to the allergic group.

Pre-eclampsia

The Signs and Sypmtoms in order of importance:

1. Abnormal weight gain. 2. Rising blood pressure. 3. Urinary changes.

Abnormal weight gain—this begins nearly always between the twentieth and thirtieth week. Any gain of 8 lbs. or over during that period is the earliest sign of trouble that we have.

The rising blood pressure usually follows later and systolic pressure of 140 or over is a sign of toxaemia, while a diastolic of 90 or over is a sign of toxaemia.

The urinary changes come later and the first signal is the appearance of albumin. A few years ago the urinary changes were considered first, but we know now that the reverse is true. There is no doubt something going wrong before the abnormal weight again appears, but just what that is we are not certain of at present. The eye changes may possibly precede the weight gain, but we are not too sure about this.

Treatment of Pre-eclampsia

I am convinced that if proper treatment is instituted sufficiently early we can correct almost one hundred per cent of our cases of pre-eclampsia. No treatment, or very indefinite plans of treatment, will lead to a decided increase in the pathology which tends to threaten the life of both mother and baby. The two mainstays of our treatment are—1. rest. 2. proper dietary programme. This can be easily carried out somewhat as follows:

1. The mild pre-eclamptic patient may be treated at home so long as she is improving. There are simply two things to do—(a) rest in bed at home; (b) put her on toxic diet, 1-2-3. The details of this diet appear on the following page.

2. The moderately severe toxaemia patient should be sent to hospital and treated the same way. In hospital she can be watched more closely. If the patient fails to improve or gets worse after a few days (five or six) of proper treatment, one should induce labour. If the cervix is ripened sufficiently and the head well engaged, simply rupturing the membranes will start labour. If the cervix is *not* ripened at all or engagement is poor, give her a slow intravenous pituitary drip, which will engage the head and further ripen the cervix. After this you may rupture the membranes. A few selected cases will be chosen for Caesarean Section, e.g.—an elderly primipara or other special circumstances.

CAESAREAN SECTION

The indications for Caesarean Section have broadened out considerably during the recent years. A timely Section is certainly much better for all concerned than a long drawn-out labour, which

may end up with very unsatisfactory results. Some of the more recent indications for Caesarean Section are as follows:

1. For a patient having a trial labour and the progress is unsatisfactory after twelve to fourteen hours of decent labour pains.
2. For breech presentations or occipito posteriors in elderly primiparae—(a patient 35 years old or older).
3. For a head arrested in mid pelvis when an easy delivery from below does not seem possible. If the pains are poor and there is no disproportion, a pituitary drip will usually bring the head down on to the perineum. If the pains are strong the pituitary drip should not be used of course.
4. For a patient with a border-line pelvis who is not progressing satisfactorily at the end of eight to ten hours of labour.
5. For a patient with a large baby and whose labour is too tardy.
6. For a grand multipara who is very tardy with her labour and whose cervix fails to dilate properly, especially with a mal presentation.

Types of Caesarean Section

1. The low flap section is most commonly used.
2. The extra peritoneal section has a place irrespective of the antibiotics.
3. A porro section is seldom required except for two reasons—(a) tumours; (b) a ruptured uterus.

RESCUSCITATION OF THE BABY

Prophylaxis

1. Avoid too much sedation and too much anaesthetic.
2. Do not leave the presenting part on the perineum beyond thirty minutes.
3. Have apparatus ready for resuscitation at time of delivery.

Resuscitation Measures

1. Clear the air passages by using a bulb syringe or catheter and do not pass catheter as far as the vocal cords. Two and one-half inches of the catheter is plenty. Elevate baby gently by the feet.
2. Apply a warm towel.
3. Use the mechanical resuscitator if necessary. The "Mann Resuscitator" is the safest one I know of.
4. The laryngoscope is rarely necessary, but should only be used—(a) by one who knows how; (b) when it is indicated.

The above simple steps should be mastered by someone periodically so that there is at all times at least one person who can carry out the necessary steps to try and save the baby's life.

POST-PARTUM PERIOD

Early rising and returning home early are excellent unless overdone. I have more faith in a rigid schedule of bed exercises and then let the patient up on the third post-partum day and home at the end of a week. The exercises are continued all the time she is in the hospital.

GYNAECOLOGY

Endocrine Therapy

1. The use of stilboestrol and testosterone for menopausal symptoms in waning fast. Far too much of these have been used in the past. To-day we find we can get along with very little hormone therapy by substituting good advice and possibly a mild sedative.
2. Treatment of Amenorrhoea due to endocrine dysfunction:

   When the ovarian hormones seem to be primarily at fault some form

of hormone therapy similar to the Hamblen plan is probably the most useful. Primary Amenorrhoea in young girls requires no specific hormone until the girl is 16½ years old unless there are special indications for such. One plan of management for either Primary or Secondary Amenorrhoea due to ovarian hormone dysfunction is now outlined,

(a) A general systemic examination is carried out, including a B.M.R.
(b) Give thyroid whenever indicated.
(c) Give diethylstilboestrol ½ to 1 mgm. T.i.d. for 21 days.
(d) Give progesterone 25 mgm. by muscle daily on the 22nd, 23rd and 24th days. Within a few days bleeding should occur.
(e) Repeat monthly and begin the diethylstilboestrol on the 3rd day of each period. Gradually reduce the therapy as the patient responds. It may require six months or more to get satisfactory results.

3. Treatment of Functional Uterine Bleeding:

Fewer uteri are being removed for this condition and excellent results are now being obtained by proper hormone therapy. The treatment used depends somewhat on the age of the patient:

(a) The real young patient is treated somewhat as follows:
    1. General systemic measures.
    2. Hormone therapy if necessary.
    3. Repeated D. & C. Operations are used for stubborn cases.
(b) Women in the child-bearing period:
    1. General systemic measures.
    2. Hormone therapy as indicated.
    3. Repeated D. & C. operations for a selected group of these.
    4. Hysterectomy may be resorted to when all else fails, particularly in the latter years of the child-bearing period.
    5. Radium may be used for a selected few. It is very important to try the simple methods first.
(c) Women at or near the menopause:
    1. General systemic measures used as indicated.
    2. Hormone therapy used whenever indicated, and certainly before resorting to either surgery or radium.
    3. Hysterectomy is used for selected cases that fail to respond to adequate hormone therapy.
    4. Radium is used for some few selected cases where hormone therapy fails and where surgery is contraindicated.

One plan of Hormone Management for cases of functional bleeding is somewhat as follows:

A. For Haemostasis—Endometrial Vascular Regulation:
    1. Give 6 mgm. of diethylstilboestrol daily for 5 to 6 days. If bleeding has not decreased by the third day of treatment, or has not stopped by the fifth day, give her double the above dose. If bleeding ceases you then continue with a dose of the same size for 21 days.

If haemostasis is secured by a curettage, you give the patient 6 mgm. daily of diethylstilboestrol

beginning on the fifth day after the curettage, and continue for twenty days. Withdrawal bleeding usually occurs within one to five days after stopping the stilboestrol.

Another cycle of treatment is begun on the fifth day of the withdrawal bleeding. If bleeding occurs at any time during the treatment, the therapy is discontinued and a new series is started on the fifth day after the onset.

2. Usually a total of three or four cycles of treatment results in satisfactory results.

In very severe haemorrhage cases one may use Premarin intravenously to check the bleeding and then begin the therapy by mouth.

B. Pituitary Regulation:

(a) On the fifth day of bleeding, following the third cycle of oestrogen therapy, a cyclic oestrogen-progesterone schedule is begun. Diethylstilboestrol 3 mgm. is given by mouth daily for 20 days. During the last 10 days of this series 10 mgm. of progesterone are given by muscle every second day. If bleeding begins before the schedule of therapy is concluded, the treatment is stopped. On the fifth day of the resulting withdrawal bleeding, another similar cycle of therapy is given. Give a total of 3 cycles of this therapy.

Sterility

1. Check both female and male.
2. Tubal patency test with Lipiodol is done whenever indicated. Twenty-three per cent of my cases have become pregnant following the use of Lipiodol and thyroid gr. 1 daily.
3. Ovulation charts are of minor assistance.

Threatened Abortion

1. We have no way of telling whether the ovum is dead or alive so must treat them all alike at present.
2. Actual treatment:
   (a) Bed rest for at least a week.
   (b) Thyroid gr. 1 T.i.d.
   (c) Diethylstilboestrol 5 mgm. T.i.d. for 2 weeks and gradually reduce.
   (d) Progesterone 25 mgm. by muscle daily for 1 week.
   (e) Phenobarbital gr. ¾ T.i.d. and h.s.
3. The alternative is to do nothing.

Prolapse of Uterus plus Cystocele and Rectocele—Treatment of:

The Manchester Operation is being considerably replaced by a Vaginal Hysterectomy plus a plastic vaginal repair.

Cancer of Cervix

1. Radium and deep X-ray is now receiving considerable surgical assistance with encouraging results.
   (a) Selected cases of Stages 1 and 2 are being treated in some centres by the Wertheim Operation.
   (b) Selected cases of Stages 1, 2 and 3 are being treated by Radium and deep X-ray, to be followed in a month by a pelvic glandular dissection.
   (c) Post-radium stretching of vagina with speculum is essential to keep vagina patent.

Cancer of Body of Uterus

1. Intrauterine radium is used to start with.
2. Six weeks later a Pan Hysterectomy is done.

3. I, personally, think a selected number of these patients should have the benefit of a glandular dissection at the time of/or subsequent to hysterectomy.

Endometriosis

1. Mild cases may need only a cauterization of the small area involved.
2. Moderately involved cases in the younger age group should be treated by conservative means until she has had her family. The conservative treatment may be palliative medicinal measures or conservative surgery. Testosterone may relieve symptoms for a time.
3. At or near the menopause one should be more radical with the removal of the organs involved when necessary.
4. After the menopause the disease regresses and active treatment is seldom necessary.

Ovarian Cysts

1. A cyst the size of an orange should be removed. Those smaller than an orange should be watched monthly and if enlarging should be removed. The smaller ones are usually follicular cysts and tend to disappear.
2. Cystectomy should be done for the removal of dermoids and pseudomucinous cysts in women under forty. This leaves the active part of the ovarian structure which will function perfectly well.
3. All hard ovarian tumours should be removed irrespective of size.

Vaginal Discharge

1. *Trichomonal Vaginitis:*
   A complete menstrual cycle of treatment is the surest way of clearing up the infection. Sporadic treatment is not sufficient.
   (a) A douche made up of 2 quarts of warm water to which is added 5 tablespoonsful of white vinegar is taken each p.m., and follow by inserting one Floroquin tablet high up into vagina. This is repeated in the morning. During the menstrual period the same treatment is carried out both a.m. and p.m., but use *two* Floroquin tablets each time. Ask the patient to stop the treatment for one week and return for a check-up.
2. *Yeast Fungus Infection:*
   Cleanse vagina with warm water and apply one to three per cent Gentian Violet to the vaginal walls twice weekly for three weeks.
3. Periodically the patient may use Floroquin tablets and vinegar douches as she wishes for Trichomonal Vaginitis or for Thrush Vaginitis.
4. During pregnancy the tablets may be used by the patient, but not the douches.
5. Senile Vaginitis is treated by cleaning vagina and follow with an Oestrogen jelly per vaginum.
6. Post cautery discharges may be treated with a cleansing douche, or better with Triple-Sulpha Cream, or with Furacin Tablets.

Hysterectomy

1. There should be a just indication for removing the uterus, and there are not too many of these.
2. Complete Hysterectomy is the operation of choice whenever possible.
3. Vaginal Hysterectomy should be used when possible.
4. The tubes and ovaries should be removed with the uterus in most cases,

unless the patient is under 35 years of age.

Routine Check-up for Gynaecological Patients

1. Patients over 35 years of age should have a pelvic check-up every six months.
2. The check-up includes: blood pressure, haemoglobin, urinalysis, examination of abdomen, examination of breasts and a pelvic examination.
3. Cervical smears for cancer detection are an aid but not the final word in the diagnosis of cervical cancer. The biopsy is the only sure way of diagnosing carcinoma of cervix, and a complete ring biopsy of cervix around the external os is the safest way of getting sufficient tissue for a complete and satisfactory diagnosis.

The Gusberg Ring Biopsy Knife may be used in the office for a cervical biopsy, but in order to curette the uterus properly the patient should be in the hospital and have an anaesthetic.

ON THE RETIREMENT OF PROFESSOR JOSLYN ROGERS

SALLY SAUNDERS, 5T9

How many pre-medical students have passed through the hands of Prof. Joslyn Rogers? The number would probably be difficult to estimate, but all of them have a special place in their hearts for Prof. Rogers.

He has been at the University for forty-six years. In 1908 he started as a fellow. He became a demonstrator in 1910 and continued in this capacity until 1917. He then became a lecturer. Finally after being an Assistant Professor and an Associate Professor, he became a full Professor of Analytical Chemistry in 1937.

For years now Prof. Rogers has planned his lectures so that they are of special interest to the student preparing to enter medicine. The stories he has told us of his practice as a medico-legal expert have been of great interest and have given us insight into some of the aspects of the career before us.

We of the class of 5T9 certainly understand why students who have been taught by Prof. Rogers always speak of him with smiles on their faces. We, too, have benefited from his wonderful patience and kindness as he answers the same question five times during a lecture, his sense of the amusing, and his insistence that everyone understand each point even if it means extra tutoring in his office. Combined with all these we have seen his capacity to make even the most ordinary chemical reaction seem interesting.

Those of you who have not studied chemistry with Prof. Rogers will say this is high praise indeed. Most professors have some of these qualities but very few have them all. Prof. Rogers, however, is unquestionably a member of the elite few.

He has been extremely interested in all the activities of the Medical Faculty and it gives great pleasure to his students, both past and present, to see him at the various social events of the Faculty.

His interest in medico-legal work has led him into numerous strange and unusual situations, and few people have more interesting stories to tell. His ability to recount these incidents has made him a popular speaker for all types of occasions.

Those of us who have been taught by Prof. Rogers will remember him always as a true gentleman and a real friend to all his students.

DIABETIC COMA IN CHILDREN

D. J. VINCE, 5T4

This paper deals with the nature, diagnosis and treatment of diabetic coma in children, under the following headings:

1. The pathological-chemical process leading to and producing diabetic coma
2. The physical findings in diabetic coma explained on a basis of the pathological chemistry
3. The diagnosis and differential diagnosis of diabetic coma discussed on the basis of the physical and laboratory findings
4. The general principles of therapy
5. The treatment of diabetic coma step by step.

THE PATHOLOGICAL-CHEMICAL PROCESS

The initiating factor is a relative deficiency of insulin. This is usually the result of subnormal insulin production. It may be due to a decreased capacity for insulin production combined with an increased demand for insulin.

Insulin acts on at least three enzyme systems involved in the metabolism of glucose.

1. It promotes glycogen storage in the liver and muscle by stimulating the enzyme phosphorylase.
2. It inhibits gluconeogenesis in the liver.
3. It takes part in the phosphorylation of glucose, an indispensible preliminary step in glucose metabolism.

By reference to the above diagram of carbohydrate metabolism, it is appreciated that phosphorylated glucose can be produced by four enzyme systems.

1. Phosphorylation of glycogen to glucose-1-phosphate in the presence of phosphorylase. Insulin catalyses this reaction.
2. Phosphorylation of glucose to glucose-6-phosphate in the presence of hexokinase. It has been recently shown that certain substances produced in the anterior pituitary gland have a powerful inhibitory action on hexokinase, an effect that is antagonized by insulin. Therefore a deficiency of insulin allows this anterior pituitary substance to inhibit hexokinase and block this phosphorylation.
3. Fructose also can be phosphorylated at the expense of adenosine triphosphate, under the influence of hexokinase and other enzymes, by a series of reversible reactions to produce glucose-6-phosphate. The action of insulin and the effect of insulin deficiency is the same as with the phosphorylation of glucose.
4. Phosphorylated glucose can be produced by a reversal of the chain of reactions leading from glucose-6-phosphate to pyruvic acid. This reversal could begin at pyruvic acid or at any point along the route. This is the path of gluconeogenesis. Insulin inhibits this enzyme system.

In summary it may be said that insulin deficiency will produce a:

—subnormal storage of glucose as glycogen

—increase in gluconeogenesis in the liver

—subnormal glucose metabolism by interfering with the phosphorylation of glucose from glycogen, glucose and fructose.

The consequences of this subnormal carbohydrate metabolism will now be discussed. The decreased storage and utilization of glucose together with the increased production by gluconeogenesis produce high blood glucose levels. There is an increase of the glucose of the glomerular filtrate paralleling the rising level of blood glucose. The amount of glucose passing into the glomerular filtrate eventually exceeds the maximum ability of the proximal convoluted tubules to reabsorb glucose, and glucose passes into the urine. The glucosuria produces an osmotic diuresis and a considerable amount of water and salt is lost in the urine.

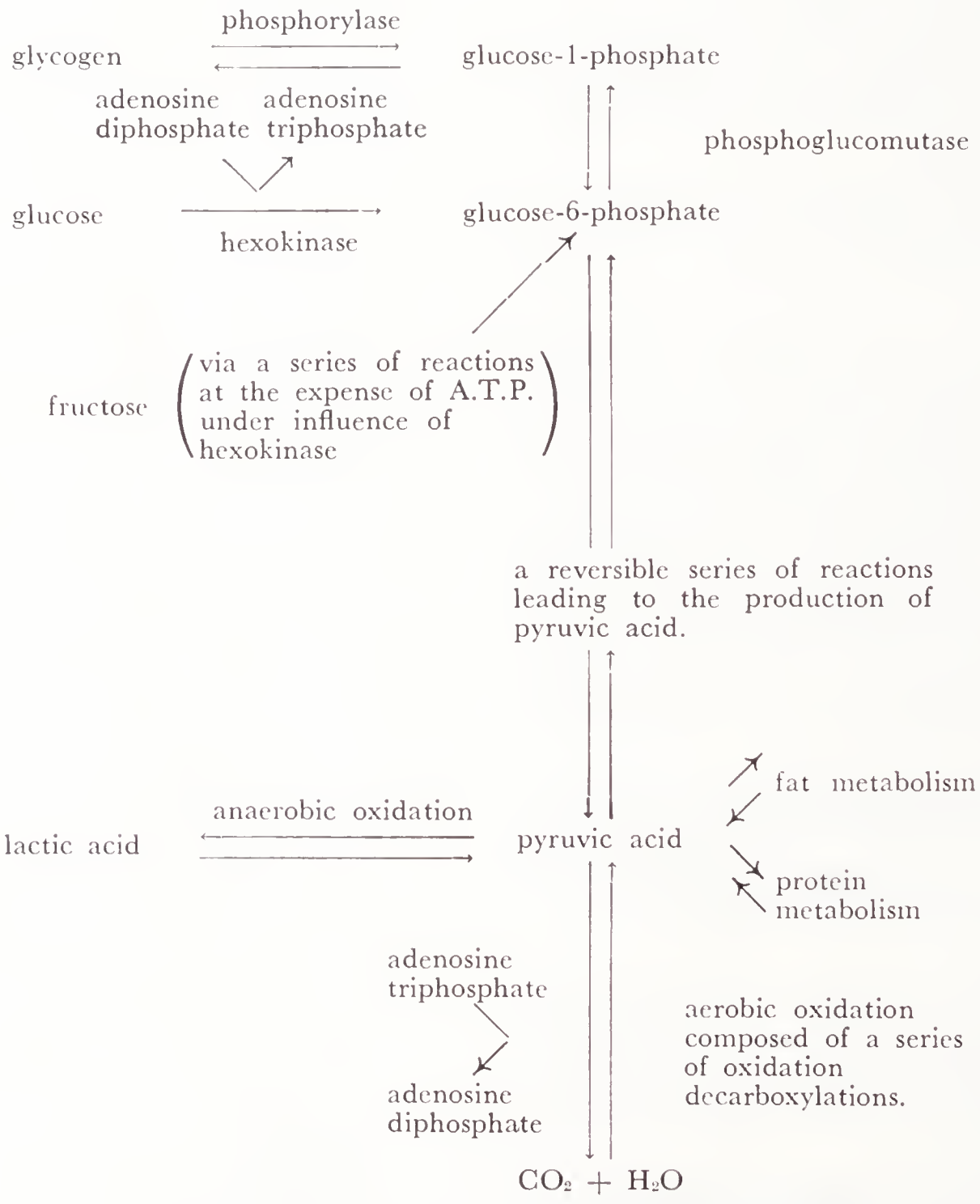

Fig. I

The energy requirements are normally met by metabolizing both fat and carbohydrate. With insulin deficiency the carbohydrate metabolism is subnormal, correspondingly more fat has to be metabolized. Once more refer to the diagram and observe that phosphorylated glucose is in equilibrium, through a long series of intervening equilibria, with pyruvic acid. If phosphorylated glucose is in short supply, as it is in insulin deficiency; it follows that pyruvic acid concentration will tend to be low. It will also be observed that pyruvic acid is connected with fat and protein metabolism. Pyruvic acid is in equilibrium with a series of reactions involving the decarboxylation of fatty acids. It is also in equilibrium with the deaminated residues of certain amino acids. Thus when pyruvic acid concentration falls there is a production of pyruvic acid from fatty acids and to a much lesser extent from amino acids. These processes take place in the liver.

A by-product of the production of pyruvic acid from fatty acids is acetoacetic acid. It and its two derivatives, acetone and β-hydroxybutyric acid are known as ketone bodies. They are products of normal fat metabolism.

With insulin deficiency there is an accumulation of ketone bodies or ketosis. This results when the increased production of ketone bodies is in excess of the body's ability to excrete and metabolize them. Ketone bodies are excreted in the expired air and the urine. Fifty per cent of the keto acids which are excreted in the urine are combined with base, Na^+ or NH_4^+. The other fifty per cent are passed as free acid. The metabolized ketone bodies are normally oxidized completely to yield CO_2 and H_2O. Most authors believe that in insulin deficiency the cells metabolize ketone bodies normally. It has been suggested that the metabolism of ketone bodies is inhibited indirectly by the subnormal carbohydrate metabolism. Thus there is hyperglycemia and ketosis.

The normal pH range of body fluids is 7.3-7.5. The range of pH compatible with life is 6.9-7.8. The body maintains a normal pH by employing three mechanisms:

1. *Simple dilution by body fluids.* The degree which a given amount of acid or base will alter the pH of a solution is inversely proportional to the volume of the solution.

2. *Buffer Systems.* The body fluids contain many buffer systems such as:

$$\frac{H_2CO_3}{NaHCO_3} \quad \frac{NaH_2PO_4}{Na_2HPO_4} \quad \frac{H\ \text{Protein}}{Na\ \text{Protein}} \quad \text{etc.}$$

The following equations illustrate the action of a buffer system

$$\underset{\text{strong acid}}{HCl} + \underset{\text{weak acid}}{H_2CO_3} + \underset{\text{basic salt}}{NaHCO_3} \rightleftharpoons \underset{\text{strong normal salt}}{NaCl} + \underset{\text{weak acid}}{2H_2CO_3}$$

$$\underset{\text{strong base}}{NaOH} + \underset{\text{weak acid}}{H_2CO_3} + \underset{\text{basic salt}}{NaHCO_3} \rightleftharpoons \underset{\text{basic salt}}{2NaHCO_3} + H_2O$$

The action of a buffer system on either a strong acid or a strong base is to neutralize it, and to diminish the effect it will have on the pH of the solution. Although H_2CO_3 is a weak acid, it is stronger than any of the other buffer acids; and therefore it can react reversibly with the salts of all the other buffer

acids. For example, consider the buffer system $\frac{NaH_2PO_4}{Na_2HPO_4}$.

$$H_2CO_3 + Na_2HPO_4 \rightleftharpoons NaHCO_3 + NaH_2PO_4$$

It can be seen that this is never a complete reaction. It stops so that the ratio $\frac{H_2CO_3}{NaHCO_3}$ in the extracellular fluid is 1/20. When this is so the pH of the body fluid will be within normal range.

In health this ratio is maintained by alterations in the H_2CO_3 content. By altering the rate and depth of respiration, one alters the amount of CO_2 lost in the expired air. This in turn influences the amount of H_2CO_3 lost from the extracellular body fluid.

$$H_2CO_3 \xrightarrow{\text{carbonic anhydrase}} CO_2\nearrow + H_2O$$

3. *Renal excretion of acid or base as required.* We have seen that in insulin deficiency there is an increased production of metabolic acids called ketone bodies. We have also noted that this production may exceed the body's abil- $+ H_2CO_3 + NaHCO_3 \leftrightarrows$ Na acetoacety to metabolize and excrete them. In order to maintain the normal range of pH, the body mechanisms for dealing with an accumulation of acid metabolites are brought into play.

The keto acids are diluted in the body fluid. The buffer systems are called into action. Acetoacetic acid $+ H_2CO_3 + NaHCO_3$ No acetoacetate $+ 2H_2CO_3$. It can be appreciated that this type of reaction will produce a decreased concentration of $NaHCO_3$ and an increased concentration of H_2CO_3. The ratio of $\frac{NaHCO_3}{H_2CO_3}$ will be increased above 1/20. The body attempts to restore the 1/20 ratio and maintain a normal pH. This is largely accomplished by hyperventilation, resulting in the increased loss of CO_2 in the expired air and therefore decreasing the concentration of H_2CO_3 in the extracellular fluid. The 1/20 ratio is restored at a lower concentration of both H_2CO_3 and $NaHCO_3$.

The kidneys also take part, and a highly acid urine is excreted which contains free keto acids and a minimum of base. Thus $NaHCO_3$ is released to the body fluid, increasing its concentration and therefore decreasing the ratio of $\frac{NaHCO_3}{H_2CO_3}$ toward the ideal 1/20.

The body fluid has lost a considerable amount of the base available to take part in the buffer systems. This base is lost by becoming fixed to free acid both in the body fluid and in the urine. To counteract this loss the kidney consumes base in three ways.

1. Some of the free acids are excreted without being combined to base.

2. The distal convoluted tubules selectively reabsorb base from the glomerular filtrate. There are three popular theories which explain how this occurs:

The carbonic acid filtration theory

$$\underbrace{Na_2HPO_4 + H_2CO_3}_{\text{contained in glomerular filtrate}} \longrightarrow \underset{\text{excreted in urine}}{NaH_2PO_4} + \underset{\text{reabsorbed by distal convoluted tubule cells and returned to body fluids}}{NaHCO_3}$$

The phosphate reabsorption theory

$$\underbrace{NaH_2PO_4 + Na_2HPO_4}_{\text{contained in glomerular filtrate}} \longrightarrow \underset{\text{excreted in urine}}{NaH_2PO_4} + \underset{\text{reabsorbed by distal convoluted tubule cells}}{Na_2HPO_4}$$

The tubular ionic exchange theory

$$\underbrace{NaH_2PO_4 + Na_2HPO_4}_{\text{in glomerular filtrate}} \quad \underset{\text{secreted by distal convoluted tubule}}{H_2CO_3} \longrightarrow \underset{\text{excreted in urine}}{2NaH_2PO_4} + \underset{\text{reabsorbed by distal convoluted tubules}}{NaHCO_3}$$

3. The distal convoluted tubule cells form ammonia and reabsorb base.

$$\text{glutamine} + H_2O \xrightarrow{\text{glutaminase}} \text{glutamic acid} + \underset{\text{secreted by distal convoluted tubules}}{NH_4OH}$$

$$NH_4OH + H_2CO_3 \longrightarrow NH_4HCO_3 + H_2O$$

$$NH_4HCO_3 + \text{Na acetoacetate} \longrightarrow NH_4 \text{ acetoacetate} + \underset{\text{reabsorbed by distal convoluted tubules}}{NaHCO_3}$$

Eventually the mechanisms compensating for ketosis and loss of base are overwhelmed and the pH of the body fluid falls below the normal limit of 7.3. Acidosis now exists.

Potassium, which is primarily an intracellular base, passes out of the cells into the extracellular fluid. The causes of this transfer are:

1. Acidosis
2. The effect of abnormal carbohydrate metabolism
3. The intracellular potassium is in equilibrium with the extracellular potassium. The extracellular potassium is being continuously depleted because of the potassium loss in the osmotic diuresis.

Therefore, although the serum potassium level remains within normal limits, the total body potassium is being depleted. During the treatment of diabetic coma the potassium returns to the cell. It can be understood why the serum potassium levels fall.

Considerable amounts of salt are lost from the body in the osmotic diuresis and fixed to free acids in the urine. In order to maintain the osmotic pressure of the extracellular fluid, water is ex-

creted. Dehydration and a decreased blood volume result.

In summary the pathological-chemical findings in diabetic coma are:

1. Hyperglycemia
2. Acidosis
3. Decreased free base in extracellular fluid
4. Salt depletion
5. Depletion of total body potassium
6. Dehydration
7. Hypovolemia.

THE PHYSICAL FINDINGS IN DIABETIC COMA

The physical findings in diabetic coma result from and can be explained on the basis of the pathological-chemical processes.

Hyperpnea

This type of respiration is characterized by a prolonged inspiratory phase and very little pause between. Hyperpnea occurs when the respiratory center is greatly stimulated. The greater the intracellular hydrogen ion concentration in the respiratory center, the greater will be the stimulation. The high hydrogen ion concentration of the intercellular fluid in acidosis, and the cellular anoxia secondary to shock, together increase the hydrogen ion concentration in the respiratory center cells and tremendously stimulate respiration. The effect of hyperpnea on the excretion of volatile acetone and in reducing the extracellular H_2CO_3 concentration has been mentioned.

Coma

The loss of consciousness and the failure to respond to painful stimuli result from the depression of cellular function of the central nervous system. This can be explained on the grounds of acidosis and cellular anoxia secondary to shock.

Shock

Hypovolemia results from a mixed salt and water dehydration. A CO_2 deficit, produced by the hyperpnea, lowers the tone of the vasoconstrictor center, arteriolar dilatation results and the blood pressure falls. The classical signs of shock are present: increased heart rate, greatly decreased blood pressure, pallor and cold extremities. Sweating is not conspicuous because of dehydration.

Dehydration

Excessive amounts of water and salt are lost in the urine due to osmotic diuresis. Considerable quantities of salt are also lost fixed to free acids in the urine. On physical examination of a child in diabetic coma one finds loss of tissue turgor, dry skin, sunken soft eyes, and a dry mouth.

Diminished Tendon Reflexes

This can be explained by the depressed function of the nerve cells involved in the reflex arc. There are no abnormal reflexes.

Râles and Coarse Breath Sounds

An increased viscosity of the secretions in the terminal bronchioles due to dehydration produces the râles. Hyperpnea accentuates the râles and produces coarse breath sounds.

Rigid Anterior Abdominal Wall

If the child is not in coma he may complain of localized abdominal tenderness. Sodium depletion and ketosis are the only satisfactory explanations offered for these phenomena.

Fever

The failure of the normal mechanisms of temperature regulation, resultant from dehydration, produce an elevated temperature.

Elevated White Cell Count

Dehydration and hemoconcentration explain this finding. There may be a concurrent infection.

DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS OF COMA

The children who develop diabetic coma may be classified into two groups. The first are those who are known diabetics and are under treatment. This group develop acidosis because: they have an infection, they have not received their insulin, or they have greatly overeaten. The second group are the untreated diabetics who are first seen in coma. This group presents the more difficult diagnostic problem.

The diagnosis of diabetic coma is aided by a family history of diabetes. The illness preceding coma is of short duration. The physical findings of hyperpnea, coma, shock, dehydration, diminished tendon reflexes and fever associated with an acid urine containing glucose and ketones indicates the diagnosis. A high blood sugar determination establishes the diagnosis.

The differential diagnosis includes those disease processes which have similar physical findings to those in diabetic coma. While there are several diseases which can produce similar findings there are none which produce these findings in association with an acid urine containing sugar and ketones.

The following diseases are sometimes mistaken for diabetic coma:

Uremia

The child has been chronically ill. There is usually edema. There may be convulsions and the N.P.N. is always greatly elevated. The urine may contain a trace of glucose but no ketones are present.

Pneumonia

The physical findings in the precoma stage of pneumonia may mimic extremely well the findings in diabetic coma. The râles and coarse breath sounds are especially confusing. Once again the urine does not contain ketones although traces of glucose may be found.

Hypoglycemia

There may be a history of a larger dose of insulin, missed meals, or excessive exercise. The physical findings of hyperpnea and dehydration are absent. The urine does not contain ketones and usually does not contain glucose.

Acute Abdomen

The diagnosis may be very puzzling if a rigid anterior abdominal wall is found in a child in diabetic coma. This is particularly so if the child is in severe acidosis and complains of localized abdominal tenderness. The urinalysis in the acute abdomen does not usually show positive tests for glucose and ketones.

Salicylate Poisoning

In this condition the urine shows a false positive ferric chloride test for ketones. If the urine is boiled first, this test for ketones will be negative in diabetic coma and remain positive in salicylate poisoning. Glucose is not found in the urine in salicylate poisoning.

Lead Poisoning

Lead encephalopathy associated with renal tubular damage and glycosuria has been mistaken for diabetic coma. There may be a history of ingesting lead salts or inhaling lead fumes. The history may be that of an acute illness.

More commonly the child is chemically ill and has had an acute exacerbation. Vomiting, convulsions and peripheral neuritis are frequent findings. The blood smear shows basophilic stippling of erythrocytes. X-rays reveal an increased density at the growing ends of long bones. The urinary test for ketones is negative.

GENERAL PRINCIPLES OF THERAPY

In general terms the treatment of diabetic coma involves the correction of the metabolic abnormality, and aiding the body to reverse the pathological-chemical abnormalities which have resulted. Any factors which may be augmenting the metabolic abnormality, such as infection, should be treated. The complications of diabetic coma should be prevented and treated if they arise.

TREATMENT OF COMA

If the child is first seen outside of the hospital crystalline insulin should be considered at once. If 3× the child's age in years units of insulin is given I.M. you will be on safe ground. A more precise dosage scale is:

0-1	year	of	age	5	units	crystalline	insulin	I.M.
1-5	"	"	"	15	"	"	"	"
5-10	"	"	"	25	"	"	"	"
10-15	"	"	"	35-50	"	"	"	"

The child should then be transported to a hospital with laboratory facilities. The hospital should be informed of the initial physical findings and urinalysis as well as the dose of insulin and the time it was administered.

The hospital treatment of a child in diabetic coma, step by step is as follows:

1. An indwelling catheter is passed and the bladder is emptied. A specimen is sent for immediate analysis.

2. Blood is taken for blood sugar, CO_2 combining power and serum potassium. These samples are sent for immediate analysis.

3. The urinalysis is done, the diagnosis is confirmed and crystalline insulin is given.

Age in years	If not in coma give S.C. dose crystalline insulin	If in coma give the S.C. dose plus an equal I.V. dose	
5-7	15 units S.C.	15 units S.C.	15 units I.V.
7-10	25 units S.C.	25 units S.C.	25 units I.V.
10-15	35 units S.C.	35 units S.C.	35 units I.V.

4. An I.V. of normal saline is begun—1000 cc. during the first 6 hours.

5. If there is infection, culture the organism and institute suitable antibiotic therapy.

6. By now the result of the initial

blood sugar has been received and insulin is administered according to the result.

500 mg% or less—no more insulin at this time

500-700 mg%—repeat the S.C. dose of insulin given on admission

greater than 700 mg%—repeat the I.V. dose of crystalline insulin given on admission.

7. If the CO_2 is less than 20 volumes% give enough 0.6 molar Na Lactate I.V. to raise the CO_2 to 35 volumes%. The volume of 0.6 molar Na Lactate required to do this can be ascertained from the equation:

$$\left.\begin{array}{l}\text{number of cc. 0.6 molar}\\ \text{Na Lactate required}\end{array}\right\} = 60 - CO_2CP \times 0.8 \times \text{wt. in lbs.}$$

Usually half this volume is given, the other half is given later if the clinical condition warrants it. The CO_2CP is repeated in 12 hours.

8. The normal value of serum potassium is 4.0 — 5.5. meq./litre. Serum potassium levels below 3 meq./litre must be corrected by I.V. administration of Darrow's solution. The child should be adequately hydrated and a satisfactory urinary output should be established before this form of therapy is instituted. 25 cc. of Darrow's soln. per pound of body weight is given slowly over an 8 hour period. The solution is best diluted with 5% glucose solution. Serum potassium level is determined at the conclusion of this therapy. To prevent falls in serum potassium, early oral feeding of orange juice, broth, or Darrow's solution is recommended.

9. The blood sugar level is determined every 2 hours starting from the time the first blood was taken. If the result is the same as the blood sugar taken 2 hours before the present sample was taken, repeat the dose of insulin given at the time the previous blood sugar result was received. If the blood sugar is increasing, double the dose given at the time the previous result was obtained. If the blood sugar is decreasing, give half the dose of insulin given at the time the previous blood sugar was received. If the blood sugar is greatly decreased, give *no* insulin and begin an I.V. of 5% glucose in saline.

10. Urinalysis is done every 2 hours. The bladder is completely emptied each time a sample is taken. Once the blood sugar levels get below 250 mg% the dose of crystalline insulin is based on the urinary findings.

4 plus and 3 plus — 15 units crystalline insulin S.C.
2 plus and 1 plus — 10 " " " "
negative for glucose — NO insulin

11. An I.V. infusion of 5% glucose in distilled water to which has been added 1 unit of crystalline insulin per 2 Gm. of sugar is begun. Urinalysis is done every 2 hours and insulin is given if glucosuria occurs.

12. After 24 hours a 2/3 fluid diet is begun. Urinalysis is done every 4 hours. Insulin is given on the basis of the urinary findings:

4 plus and 3 plus — 10 units of crystalline insulin S.C.
2 plus and 1 plus — 5 " " " " "

The details of the regulation of the child's diet, activity and insulin dosage, and the educational aspects of diabetic treatment are beyond the scope of this paper.

BIBLIOGRAPHY

1. Brown, Alan, and Tisdall, F.: Common Procedures in the Practise of Pediatrics. Ed. 4, Toronto, 1949.
2. Nelson, W. E.: Mitchell-Nelson, Textbook of Pediatrics. Ed. 5, 1950.
3. Baldwin, Ernest: Dynamic Aspects of Biochemistry, 1949.
4. Best, C. H., Taylor, N. B.: The Physiological Basis of Medical Practice. Ed. 5, 1950.
5. Mitchell, P. H.: A Textbook of Biochemistry. Ed. 2, 1950.
6. Chute, A. L.: Management of Diabetes in Children, Modern Medicine of Canada, July 1951.
7. Suest, G. M.: Holt–Pediatrics. Ed. 12, 1953.
8. White, Priscilla: The Child in Health and Disease. Ed. 2, 1952.
9. White, Priscilla: Diseases of Metabolism by G. G. Duncan. Ed. 3.

It is easier to buy books than to read them and easier to read them than to absorb them.—OSLER.

THE GRADUATING CLASS 1954

W. H. McCRAE, 5T5

This report is not intended for the mathematically minded reader, for he will undoubtedly be swift to note that the results are predicated upon a slim fifty-four per cent of those eligible to express an opinion, and that for this reason, our technical staff has deemed it unwise to analyse many of the answers as completely as has been done at times in the past.

Of necessity then, this report is aimed at the larger, if less vociferous, group of our readers who are, in fact, merely curious.

Of all the statistical conclusions that are drawn each year from the accumulated answers of the graduating class to their annual survey, the most significant single fact is that nearly fifty per cent of those who find themselves upon the brink of their interne year have somehow managed to set themselves beyond any real self-awareness as a class-unit in the undergraduate body of this faculty.

This is no newly-discovered finding, for it has loomed with sullen emphasis over each successive group of amateur analysts who have undertaken this survey.

One must not be too swift merely to regard the "Silent 50%" as ingrates who comprise the deadwood of the graduating (or any other) class. This may well be time to take serious heed of the fact that the 150 students of a given year can sometimes be united in support of faculty-wide activities; can always be led in small groups in support of various athletic, recreational and fraternal organizations; but can almost never be relied upon to answer in docile unison to requests made on behalf of purely class-level activities.

The truth of the matter is that by the time the student has shouted himself hoarse for Dear Old Varsity and Dear Old Meds all fall, has sung himself hoarse at Daffffydill, and has attended some hundreds of lectures with his 150-odd classmates, he is often thoroughly sick of being asked to turn out for organized mass-activities even on a class level.

The final year student can scarcely be blamed if, in the last few months of his undergraduate career, he reacts with a degree of negative cynicism to the last of a host of attempts to reduce him to a mere one hundred and fiftieth of some larger entity, without character or personality. This pays scant respect to his status as an individual, a status he must preserve against the day when he will embark upon the profession which is of all most humane and honourable.

The following is submitted without bias or further comment.

I. Vital Statistics:

1. **Age upon graduation:** twenty-four years.
2. **Sex:** Male 89%
   Married: about 23%
3. **Country of birth:**
   Canada 88%; U.S.A. 4%; Other nations 1% each or less.
   If Canada, what province: Ontario 76%; Sask. 4%; Quebec 2%; B.C. 1%; Man. 1%.
   From urban community: 84%.
4. **First three choices of hobbies** and recreational activities: 1. Music; 2. Athletics; 3. Reading.

II. Accommodation and Finances:

1. **Living at home:** 69%.
   Facilities for study: good 79%; fair 15%; poor 6%.

2. **Did you work** during the summer months? 100% yes.
   Average earnings: $600. (range up to $1200).
   How many summers in hospital:
   none 40%; one 40%; two 12%; three 6%; four 2%.
   In laboratory:
   none 81%; one 8%; two 7%; three 2%; four 2%.
   Worked at Christmas time: 63%.
   Worked during term: 26%.

3. **Average amount of financial help required:** $3600.
   Must this literally be paid back? 68% No.
   If Yes, average owed is $1000.

III. University Life:

1. **Did you participate** in Interfaculty athletics? Yes 68%; Intercollegiate athletics? Yes 16%; Unorganized athletics? Yes 72%.
   In favour of intercollegiate athletics? 70%.

2. **Is Daffydill worthwhile?** Yes 95%; Have you ever taken part? No 65%.
   Have you ever attended the Medical At-home? Yes 83%.
   The chief suggestions were: Allow longer period to dance; Improve or remove the entertainment.
   Most worthwhile activities: Daffydill 40; Meds At-Home 16%; Sports 46%; Undergraduate societies 12%; Journal 2%; Social events 22%; Staff-student groups 6%; Glee Club 4%; Osler Society 6%; VCF 4%; Hart House Theatre 2%.

3. **Do you feel the need to become better acquainted** with the members of your own or other medical years? Yes 64%.
   Do we need a medical common room? Yes 92%.

4. **Are you in favour** of college fraternities? Yes 78%; Have you joined one? Yes 48%; 34% in professional fraternities. Would you advise a younger medical student to join a fraternity? Yes 44%. Would advise professional 24%; non-professional 28%; either 8%.

5. **Do you try** to keep abreast of political trends? Yes 74%. Would like a course in political science? 56%.

6. **What is your final aim,** as you enter professional life? The aim generally is to practise good medicine and to lead a full, rich life.
   In what way has the course altered your impressions of medicine? The life seems less glamorous. A better understanding of the problems at hand is felt.
   In what way has the course affected your own philosophy of life? Tend to be more realistic and fatalistic. General solidification of desire to lead a useful life.
   Would you like more lectures dealing with the field of medical ethics? Yes 36%; No 28%.
   Lecturers suggested: a G.P.; any of the professors; a Roman Catholic.

7. **Have you any suggestions** or strong feelings about: The Medical Society; want to learn more about it. The Varsity; a very poor paper 91%. Medical Journal: excellent; want more news and notes; want some review articles: Camsi; not worthwhile, except for CIPS; Camsi Journal: poor; should select best articles from each of the University journals: Hart House; meals too expensive; should be coeducational: Reading Room; cold, noisy, dirty; inconvenient location: This questionnaire; worthwhile; (but response only 54%).

IV. The Medical Course:

1. **Which was the heaviest year?**
   I Meds 50%; III Meds 40%.
   The easiest year? IV Meds 26%; I Premeds 22%; II Meds 20%; III Meds 16%.
   The most profitable or informative year was: III Meds 52%; IV Meds 34%.
   Would you have preferred more unscheduled time during the week? Yes 48%; No 42%.
   Suggestions for better time-allocation:
   1. More clinical teaching, less ward work.
   2. More correlation of basic sciences with clinical work.

2. **The clinical subject** most enjoyed was: Medicine 44%; Paediatrics 24%; Obstetrics 20%.
   The clinical subject best taught was: Medicine 34%; Paediatrics 24%; Obstetrics 18%; Dermatology 14%; Therapeutics 12%.
   Preclinical subject best enjoyed was: Pathology 44%; Anatomy 24%; Physiology 10%.
   Preclinical subject best taught was: Anatomy 72%; Pathology 14%; Neuroanatomy 14%.
   The best organized clinics or laboratory classes were: Paediatrics 34%; Medicine 30%; Anatomy 30%.
   Unfavourable reactions to the way any subject was taught, or the way in which the work was organized: Surgery 34%; Hygiene and P.M. 24%; Biochemistry 14%; Path. Chem. 12%; Bacteriology 12%; Physiology 12%.
   Complaints in this regard: more clinics, less ward work. Surgery: clinicians do not show up; lacks organization; more theatre clinics as in Medicine. Hygiene: too many hours devoted thereto; put it all in final year; don't put it all in final year.

3. **Reaction to the premedical course:** Favourable 66%; Unfavourable 16%.
Comments: Should have 3 years premed and get a degree; more emphasis on English and Philosophy; should include political science or sociology; put some Anatomy into second Premedical year.

4. **If you could live your life over again,** would you enter medicine? Yes 88%; No 10% (not personally suited for the work).
Would you choose the course here at Toronto? Yes 66%; No 32%.
Course too large and impersonal. Toronto too self-satisfied.

5. **Had you attended University** before entering this faculty? Yes 28% (mostly for 4 or 5 years). Degrees obtained: B.A. 16%; M.A. 2%. Degree from PHE 4%.

V. Plans for the Future:

1. **What branch of Medicine** do you plan to enter?

General practice:	48%	(last year 45%)
Specialty:	40%	(last year 46%)
Paediatrics	10%	(last year 8%)
Surgery	4%	(last year 8%)
Medicine	12%	(last year 5%)
Obstetrics	6%	(last year 4%)
Psychiatry	2%	(last year 2%)

Do you hope to proceed from G.P. into a specialty? No 34%; Yes 32%; Don't know 22%; No answer 12%.
If so, after how many years? average answer 2–5 years.

2. **How long would you like to interne?** 56% 2 years.
How long do you intend to interne? 42% 1 year; 25% 2 years.
Do you expect to take your internship in Canada? Yes 80%; Where else? U.S.A. 22%; England 14%; elsewhere 2%; many wished to spend part time outside Canada.
Do you want to do some postgraduate training? Yes 86%. Average length of time contemplated: 3–4 years. Would you pursue such training in Canada? Yes 66%.

3. **Do you expect to practise in Canada?** Yes 86%. If so, in what province? Ontario 78%; B.C. 6%; The West 4%. You will practise in (a) a city 46%; (b) a town 42%; (c) smaller community 12%.
Yave you a definite opening or opportunity? No 80%. Will you be in partnership with an older practitioner? Yes 14%.

4. **Would you like to practise** as part of a group? Yes 72%; No 10%. If yes, permanently? Yes 90%.
How many practitioners would you want in such a group? Average answer 3–5. Would you be a specialist or G.P. in the group? G.P. 26%. Would you pool expenses and equipment? Yes 78%. Do you really expect to take part in such a scheme? Yes 36%; No 36%; Don't know 28%.

5. **Would you accept a post** in the field of industrial medicine? Yes 46% (of these almost all want part-time work). Would this be a permanent arrangement? Yes 28%.

6. **Are Health Insurance plans** in the best interests of our profession? Yes 84%.
Do you expect to see a substantial degree of socialized medicine in Canada within ten years? Yes 64%. Is socialized medicine in the best interests of the public? Yes 62%; the profession? No 60%.
The chances that Canada will be involved in a major conflict within the next ten years are: Good 30%; Fair 34%; Poor 18%; Can't tell 16%.
In the event of such necessity, I should prefer to serve in the Army 44%; Navy 14%; Air Force 32%; None 4%; Don't care 4%.

NEWS AND NOTES

Dean J. A. MacFarlane was elected an Honorary Member of the Association of Military Surgeons of the United States in January, 1954.

* * *

Dr. Donald Fraser has been awarded a John and Mary R. Markle Foundation Scholarship to continue research in his interests of clinical paediatrics and physiology.

* * *

Dr. R. F. Farquharson has been made an Honorary Citizen of the State of Texas.

* * *

Dr. R. M. Janes was elected an Honorary Member of the Society of Thoracic Surgeons of Great Britain and Ireland, on November 13th, 1953.

* * *

On January 14th, last, Dr. R. M. Janes addressed the Hollywood Academy of Medicine on "The Surgical Management of Lesions of the Breast" and on January 23rd, last, Dr. R. M. Janes addressed the Los Angeles Surgical Society on "Post-Operative Complications", and at the same meeting was made an Honorary Member of the Los Angeles Surgical Society.

* * *

Dr. E. V. Kalyani, Honorary Obstetrician and Gynaecologist at the Government Hospital for Women and Children in Madras, and Dr. P. M. Naidu, Professor of Obstetrics and Gynaecology at the Osmania Medical College in Hyderabad, India, have been visiting in the clinics of the Department of Obstetrics and Gynaecology, University of Toronto. While they were here, they were shown the work in the Cancer Clinic and the gynaecological operative procedures carried out in the University Hospitals of Toronto.

Medical Alumni Scholarships and Bursaries

The Medical Alumni Association has great pleasure in announcing the awards of their scholarships and bursaries in the Faculty of Medicine. They are as follows:

Scholarships

1st Premedical Year—Roy Turchin, $200
2nd Premedical Year—Miss Roslyn Ezrin, $200
1st Medical Year—K. O. McCuaig, $300
2nd Medical Year—Bernard Langer, $300
3rd Medical Year—J. D. T. Ainslie, $300
4th Medical Year—R. J. Watson, $300

Bursaries

2nd Medical Year—Terence M. O'Heany, $100
2nd Medical Year—Gerald M. O'Dwyer, $100
2nd Medical Year—Robert J. Carlson, $100
3rd Medical Year—Manuel Spivak, $100
4th Medical Year—Alex R. Yarrow, $100

* * *

Dinner in Hart House

Fifty years ago the Class of 1904 in Medicine left the University campus and scattered throughout Canada, the United States and even further afield to establish practices. On Tuesday, June 15th, many of them will come back to the University as guests of honour of the Medical Alumni Association at a dinner in Hart House. Sharing honours with them as guests at the dinner will be the Class of 1954 who will graduate the following day.

A noted guest speaker has been secured to address the gathering. A Medical Alumni Scholarship will be announced and presented to the winner in the Graduating Year. The University carillonneur will be on hand to play selections on the bells in the Soldiers' Tower, and a pianist will play appropriate music during the dinner hour.

Several of the graduates of 1904 are travelling great distances in order to be present at this great event and at the Convocation on the 16th, at which members of the Class who hold the Bachelor of Medicine degree will receive M.D. degrees from the University.

* * *

Panel Discussion on General Practice

Dr. Ian Urquhart for the second time ably organized the Panel Discussion on General Practice, which was held in the lecture theatre of the Toronto General Hospital on the evening of Febrary 8th, 1954. The room was filled to capacity with final year students and internes, and by both their applause and comments at coffee later in the evening, they indicated beyond any doubt that this affair is greatly valued by those for whom it is given.

Dr. Urquhart merits praise for his selection of panel members who represented most of the important types of general practice. Their comments were filled with wisdom and yet were by no means lacking in wit, the latter an element so essential to the success of such an affair. For the seventh year in succession Dr. Valentine F. Stock skilfully directed the questions and answers as panel chairman.

The panel consisted of Dr. William Wilfred of Wiarton, Dr. Bruce Halliday who is engaged in partnership practice in Tavistock, Dr. Eva Mader Macdonald of Toronto representing the fairer sex, Dr. Walter F. Prendergast who is doing industrial medicine in Toronto, and Dr. W. H. Fader, also of Toronto.

* * *

Dr. John Hepburn, former associate professor of medicine at the University of Toronto, has been elected president of the Royal College of Physicians and Surgeons of Canada.

* * *

Dr. C. H. Best of Toronto, has been elected the first president of the newly-formed International Union of Physiological Sciences.

Have no higher ambition than to become an all-round family doctor, whose business in life is to know disease and to know how to treat it.—Osler.

ABSTRACTS

Clinical Evaluation of Erythromycin: E. N. Shoemaker and E. M. Yow, Archives of Internal Medicine, March 1954, pp. 397.

Erythromycin (Ilotycin) is an antibiotic derived from Streptomyces Erythreus, which was discovered, produced and isolated, and later described in June 1952, by McGuire and co-workers. The physical and biochemical properties are well-described by the authors. Aqueous solutions are stable for eight weeks at 4°C. in a frozen state. An acid pH is very destructive to Erythromycin, which has a pH of 9. Its activity increases with increasing alkalinity—roughly tenfold for each pH unit. It is said not to be affected by serum, NaCl, dextrose, PABA, or reduced oxygen tension.

The spectrum of this antibiotic is wider than penicillin, but not as wide as chlortetracycline, chloramphenicol or oxytetracycline. It is effective against gram positive organisms; but only slightly effective against gram negative organisms. Streptococci are inhibited by a concentration of 3.1 micrograms/cc. and micrococci by 3 micrograms or less Neisseria, Hemophilus and Claustridia were quite sensitive and also some strains of Brucella. None of the gram-negative bacilli were sensitive.

Erythromycin is effective only against the rapidly-growing organisms, where it is bacteriocidal. No naturally-occurring resistant strains (of organisms sensitive to Erythromycin originally) have been found, but in vitro strains have been produced which are of increasing resistance. No erythromycinase has yet been demonstrated.

Absorption is good in the upper GI tract, especially if ingested before meals, but enteric-coated tablets must be used to protect against the destructive action of gastric acids and also against the bitter taste. Some workers favor the use of an alkali (aluminum hydroxide) to protect the drug in the GI tract, after oral administration.

After oral administration of 500 mg. enteric-coated tablets, serum levels are found to be in the range of 1-2 microgram, for as long as six hours, therefore, in adults, satisfactory blood levels can be maintained by a dosage of 500 mg. given q. 6 h.

Erythromycin does not pass into the C.S.F. in normal people, but does diffuse in pleural and ascitic fluid and also undergoes placental transmission. It is excreted by the liver and concentrated in the bile. Mice and guinea pigs have been protected against C. Diphtheriae, Pneumococcus, Psittacosis virus and E. Histolytica.

Several cases are well-presented and the rapid response to Erythromycin is shown graphically. The commonest side-reaction to Erythromycin is cramping abdominal pain and mild diarrhea. Occasionally vomiting also occurs.

F.P.C.

Role of the Friendlander Bacillus in Chronic Respiratory Disease: J. K. Fulton and B. C. McKinlay, Annals of Internal Medicine, Vol. 40, no. 2, 1954, pp. 245.

The authors feel that Friedlander Bacillus (Bacillus Mucosus Capsulatus, Klebsiella Pneumoniae) has unique properties which enable it to persist as a low-grade chronic invader of structurally normal bronchi, sinuses and urinary tract. The type of pneumonia is often fulminating, tends to produce cavitation, and has a natural mortality of 30-50%. Since this organism is usually resistant to sulphonamides and penicillin, early diagnosis and therapy with broad spectrum antibiotics is essential.

It is felt that many mild cases of Friedlanders pneumonia go unrecognized or are termed "virus infection" because of their inability to respond to routine therapy, and in this way often may end as a chronic Friedlander bronchitis, chronic lung abscess, or bronchiectasis.

Previously unsuccessful penicillin therapy, raising of peculiarly green, glairy, putrefactive sputum should make one suspect this disease. Aerobacter Aerogenes is thought by some workers to be the same organism, and B. Coli resembles Friedlanders Bacillus morphologically, so that the presence of Aerogenes or B. Coli cannot be lightly dismissed. The best method of isolating the organism is blotter antibiotic inhibition of blood agar streak taken direct from a single fresh bolus of sputum. The growth is typically large, gray-white, very mucoid colonies. Friedlander's is one of the few bacteria which grow well on Sabourauds agar.

F.P.C.

Common sense in matters medical is rare and is usually in inverse ratio to the degree of education.—Osler.

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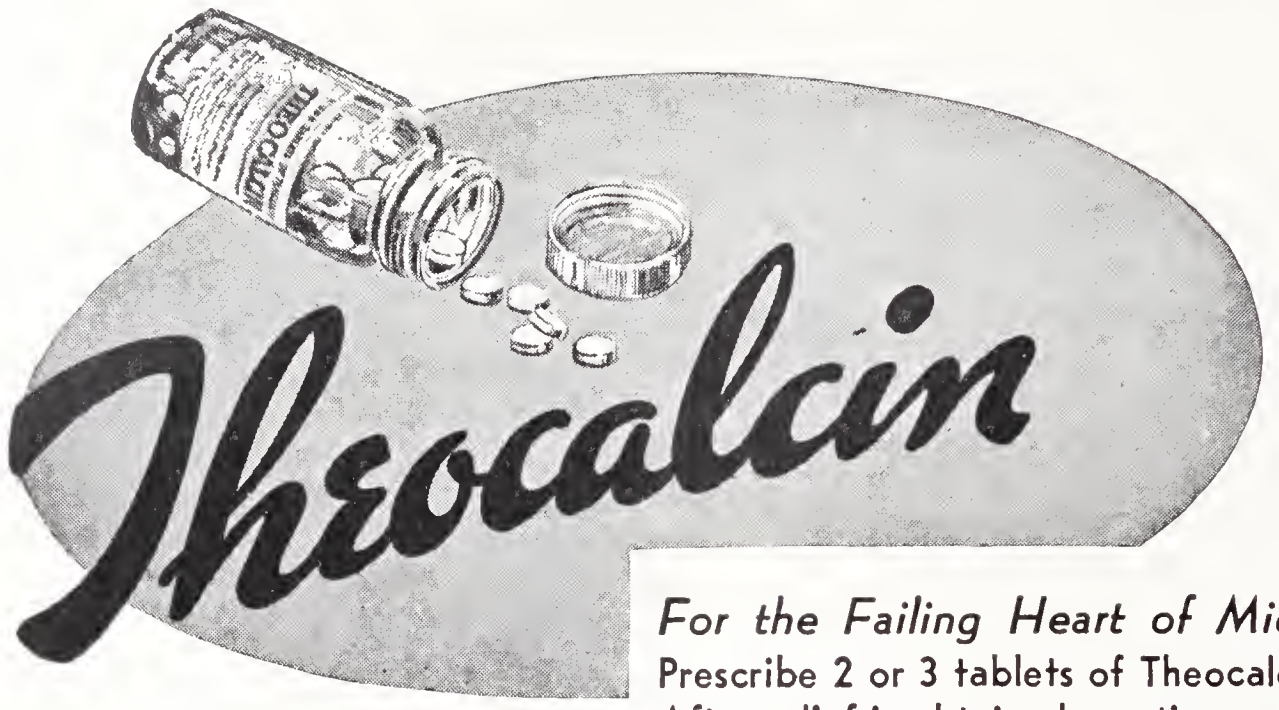

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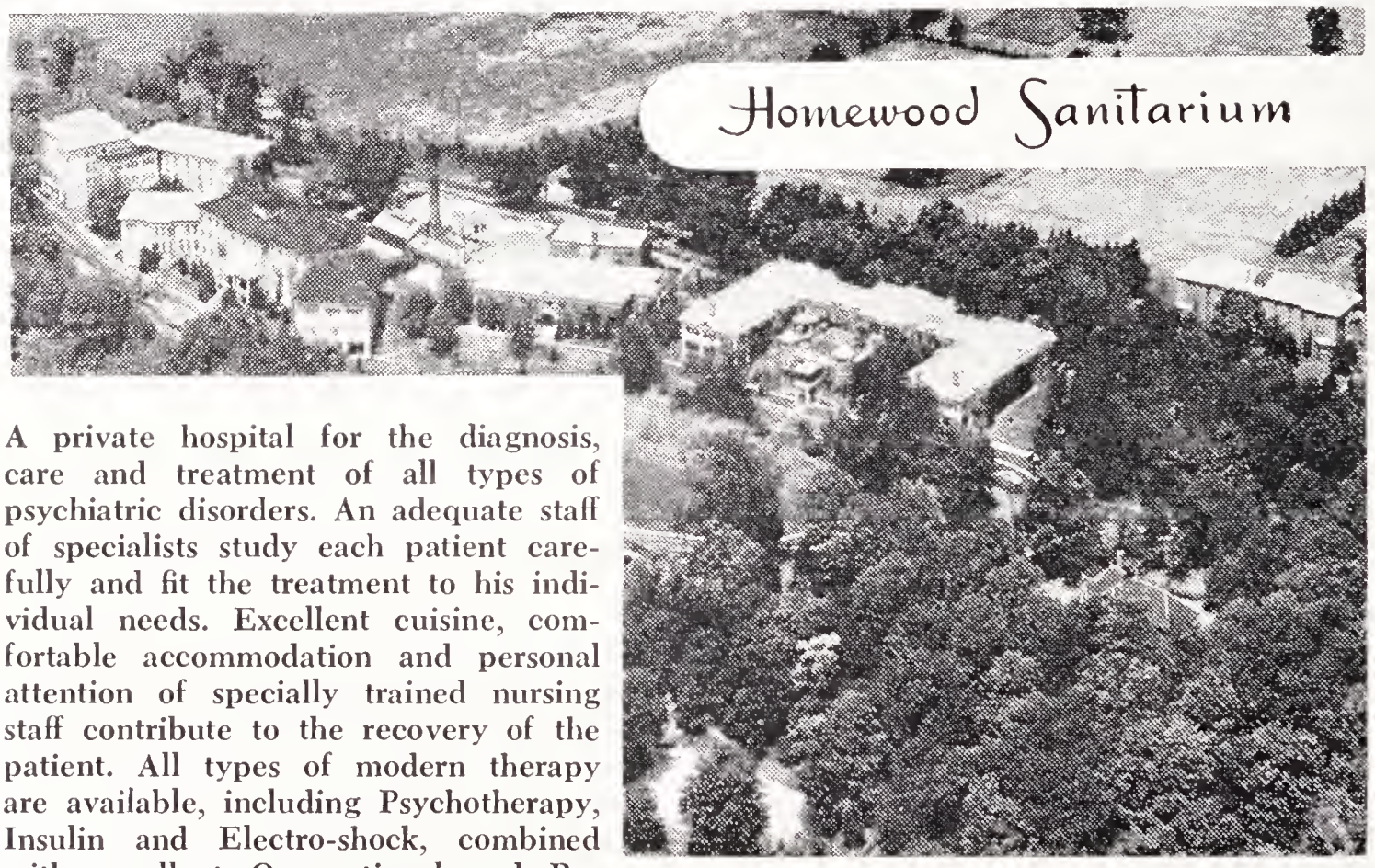

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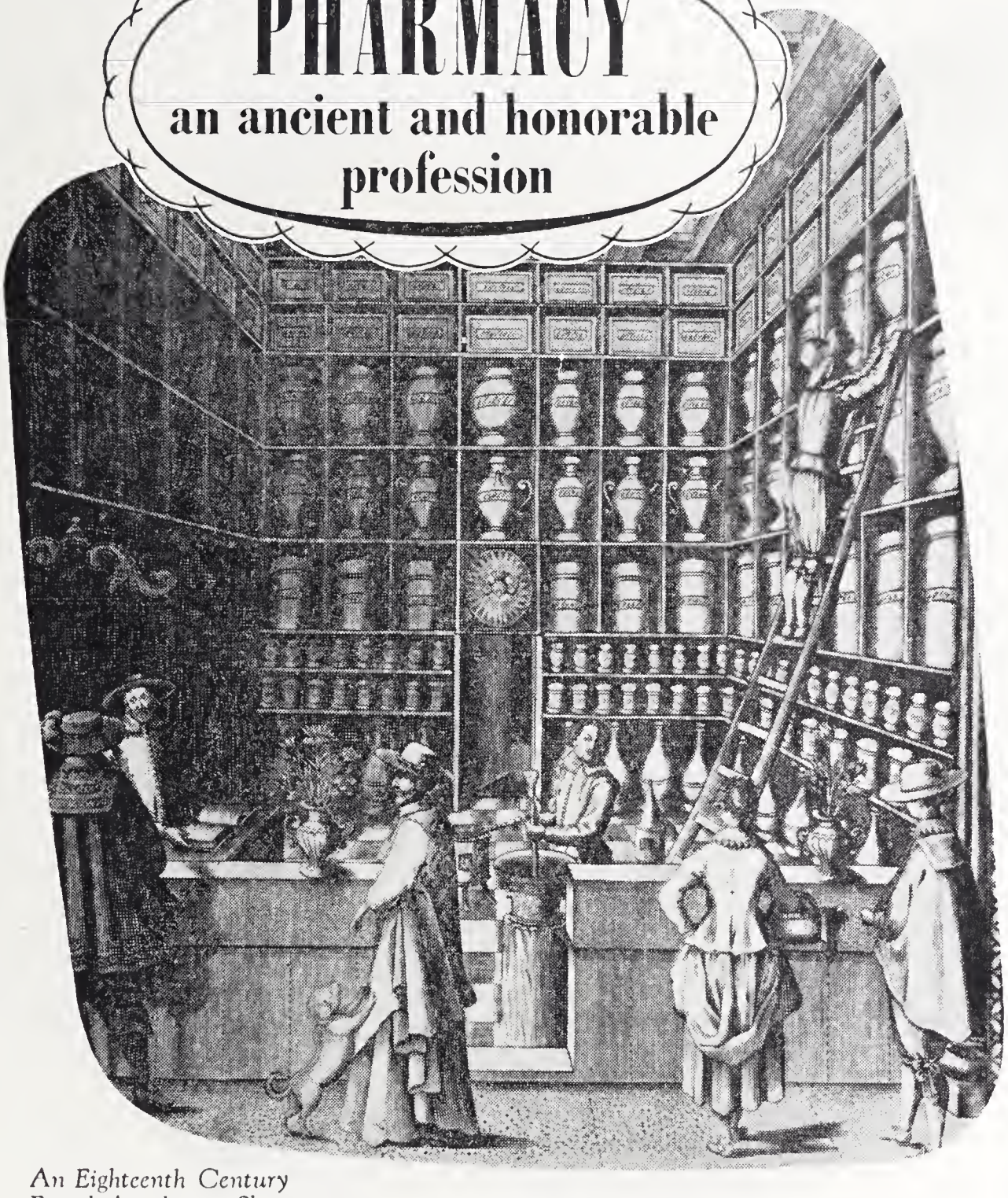

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For a period of three years, Guttmacher and associates[1] studied the efficacy of jelly-alone technic for contraception among multiparas and patients of lower parity. Although the method achieved marked success among all groups, a few unplanned pregnancies did occur. It was possible to categorize all of these unplanned pregnancies into either "method failures" or "patient failures." Patient failures were those wherein patients readily admitted occasional or frequent omission of the use of the jelly before intercourse. Method failures were attributed only to those cases where patients averred a complete adherence to the use of the jelly.

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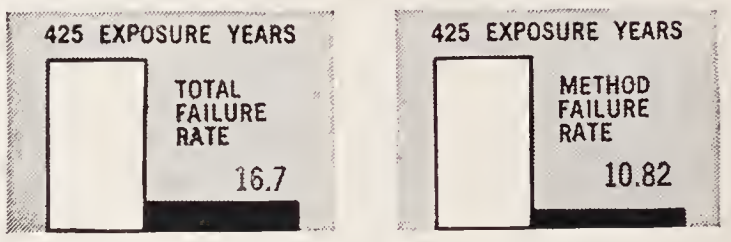
1 Finkelstein, R.; Guttmacher, A., and Goldberg, R.: Am. J. Obst. & Gynec. 63:664, Mar., 1952.



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References

(1) Kirby, W. M. M.; Waddington, W. S., & Doornink, G. M.: Antibiotics Annual, 1953-1954, New York, Medical Encyclopedia, Inc., 1953, p. 285. (2) Finland, M., & Haight, T. H.: *Arch. Int. Med.* **91**: 143, 1953.

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